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A FAVORABLE OUTLOOK.

WITHOUT regard to current talk about "the return of prosperity," it may be asserted that the outlook for the rubber industry is favorable, rather than otherwise. We feel sure that the manufacturers, after a long period of dullness, would welcome even a small degree of improvement, and that of gradual realization, instead of indulging in regrets that it was not more marked. In so far as their complaints have related to the volume of business, improvement seems certain—in all staple lines of rubber goods, if not in the production of new specialties, in molded work and the like.

The rubber-shoe factories are especially busy, as they have been since the beginning of their season, owing to liberal orders brought out both by short stocks in the trade and by lower prices than have prevailed for several years. The effect on profits of the latter element remains to be tested, besides which the snowfall of next winter is an uncertain quantity. The advanced duties on lumber are likely to result in transferring a good share of the lumber industry now carried on beyond the Canadian border to this side of it, with a corresponding effect on the source of supplies of footwear for the lumbermen.

The mechanical-goods people have not been running at full capacity, but we note that they are getting in readiness to increase their operations at the first sign of improved demand, and that at least two important plants are being extended materially. The improved railroad earnings due to the heavy crops in the west and the large shipments of merchandize for which the farmers will soon be spending their money, will enable the railroad companies to relax somewhat their recent enforced economy in the purchase of rubber supplies. The exceptional production of wheat this year will stimulate the demand for threshing-machine and grain-elevator belts. Not only lumbermen's shoes, but rubber sawmill-belts come into increased demand with an improvement in the home lumber trade. There is a heavy cotton crop this year, the ginning of which will create a demand for more belting than usual. Then the revival of interest in mining in a number of states will lead to a better demand for certain lines of goods from the rubber factories. Finally may be mentioned the paper-making industry, which improves with the general conditions of business, and the machinery for which requires a large equipment of rubber rollers and rubber belting.

But we must not overlook the tire trade, now inactive on account of the time of the year. The past season in bicycles proved less satisfactory than could have been wished, but it was a period of readjustment and reorganization—of weeding out undesirable methods as well as irresponsible members of the trade—the results of which will leave the business on a better basis for the tire-manufacturers and for all others concerned. The rubber-men who handle tires next season ought to make money on them.

It happens that there is scarcely an industry which does not involve the use of enough rubber for an improvement in its output to affect favorably some branch of the rub-

ber trade, while the sale of rubber goods for the promotion of comfort and convenience in living tends constantly to advance, and especially with every increase in personal expenditures that accompanies business prosperity. For all these reasons and for others of a kindred nature, it seems entirely safe to predict a larger output of rubber goods than for years past. But it is doubtful whether, in any line of rubber now staple, the high-water mark of profit will again be reached. Profits must depend to a large extent upon economies of management, as where a mill yields a profit only when operated at full capacity, and results in loss whenever the maximum rate of production ceases For those rubber concerns which are not so circumstanced as to be run with the utmost economy—and the same is true of every other line of manufacturing—we see no early prospect of prosperity.

RUBBER AT THE NEXT PARIS EXPOSITION.

WHILE not many echoes have reached this country of the work being done in Paris in behalf of the great international exhibition of 1900, it is safe to assume that that undertaking is to surpass anything that the world has yet seen. France has the ability—financial and otherwise—the ambition and the experience in organizing exhibitions to enable her to put this next one at the head of all others. It is not improbable, by the way, that this will be the last great exhibition, not only for Paris, but for the world, for a long period of time. Certain it is that it will be well worth seeing, and one that no great industrial interest in the world can afford not to be represented in.

To no people in the world should this great event be of more interest than to the people of the United States, now that our exports are no longer confined to cotton, breadstuffs, and provisions, but include many high-class manufactures. Already the products of our looms and machine-shops are going into the heart of the greatest industrial nations of Europe, and gaining a substantial footing there The Paris exhibition will afford an opportunity for advertising the excellence of our products not only to Europe, but to Asia and Africa as well. It will be conveniently accessible to travel from more parts of the world than any past exhibition.

But no mere individual manufacturer should risk being overlooked by exhibiting alone at Paris. Associated exhibits will be the thing—say of the whole India-rubber industry in the United States. Nowhere else in the world could so imposing an exhibit of rubber be made. It would discount the whole rubber industry outside. It would force the world to see what our rubber manufacturers can do, and it would sell their goods. It is not too early to organize an American rubber exhibit for Paris.

THE MOST IMPORTANT STEPS in rubber-cultivation now under way are being taken in Ceylon, where the new director of the royal botanic gardens is addressing himself to the task enthusiastically, in the belief that results of great value are attainable. It is not impossible that his hopes may be grounded on reason. While Mr. Gustav Mann's long experience in Assam led him to discourage all planting of exotic rubber species, the pioneer introducer of Pará rubber-trees into India—Sir Clements Markham—has recorded in THE INDIA RUBBER WORLD his belief that, if the initial attempts had been seconded with proper vigor, that country would now be an important producer of Pará rubber. But supposing Mr. Mann to be entirely right with regard to the localities in which he worked, it may be that Mr. Willis has found in Ceylon exceptionally favorable circumstances, and that the hundreds of planters who in that island are seeding Pará rubber alongside their tea estates may derive a profit therefrom as promptly as the last generation did from their first plantings of tea. Though we Americans are little tempted to invest in rubber plantations under any conditions, we may watch with interest the development so confidently predicted in Ceylon, remembering that we, no less than the rest of the world, have profited from the enterprise shown by the English colonists there for more than a third of a century in the growing of cinchona.

IT SPEAKS WELL FOR THE ACTIVITY of the India-rubber industry in the United States that the exports of crude rubber from Pará to this country since January 1 have exceeded the exports to all other countries combined. This was always the customary thing until within a year or two past, when our takings of Pará rubber were exceeded largely by Europe. There can be no doubt that with general improvement in business conditions, such as now appears in prospect, our rubber factories will become so active as to regain for the United States the position of consumer of the larger share of Pará rubber. It may be assumed safely that the rubber imports this year have been, as a rule, for prompt consumption. We have never handled a great deal of rubber for reëxport, and rubber of all grades has been too high of late to encourage buying for either storage at the factories or for speculative purposes. It must be admitted, however, that in the distribution of "fine Pará" this year we have fallen somewhat beyond the European buyers. But with the busy conditions that have prevailed of late among the American factories even this distinction in favor of our foreign competitors will be short-lived.

ACCORDING TO RECENT NEWSPAPER REPORTS, the simultaneous absence in Europe of Messrs. Joseph Banigan and Samuel P. Colt was due to certain plans for raising foreign capital to buy out the Boston Rubber Shoe Co., in order to consolidate it with the Banigan and "Trust" interests. We are surprised that they should have gone to Europe for money, if it be a fact, as recently asserted by the New York *Journal* in a leading editorial, that the rubber "'trust' has accumulated $5,000,000 more than it has dared to divide." It is probable that the general public, however indignant and outraged at the accumulation of this big surplus, would not protest strongly against the transfer of the money to Mr. Converse, for an interest in so good a business as he has built up.

THE FACT THAT EACH FACTORY SUPERINTENDENT of the United States Rubber Co. will hereafter be personally responsible for his own mill and not, as in the past, under a general superintendent, does not argue that such an office was created in vain and found to be void of good results. On the contrary, the efforts of the general superintendents have been most fruitful of good. The quiet but practical abolition of the office means that hereafter the individuality of the various companies is to be fostered, a policy which will, in our judgment, if carried out fully, be of incalculable benefit to the United States Rubber Co.

THE TESTING OF INDIA-RUBBER GOODS.

From "Engineering," London.

WE have on more than one occasion been approached by buyers of India-rubber goods with queries as to some method of ascertaining the quality, even approximately, of their purchases. Something besides chemical analysis is wanted, they say, as such analyses are not only apt to to be expensive, but in many cases they do not indicate the presence of any latent evil such as errors in mixing the materials or in vulcanization. Such faulty workmanship is apt, when the goods are in use, to show itself in an undesirable way, and consequently to lead to passages of arms between buyer and seller, a condition of things to be avoided in the interests of both parties. It is the wholesale buyer who more often finds himself in difficulties in this way, because, although he can generally by strong representation get the goods complained of replaced by the manufacturer, yet such replacement does not obliterate the effects of the evil, as loss of trade resulting from a bad name is not regained all at once.

Another great drawback to chemical analysis is that the goods have to be cut up, or at any rate, cut into, at some point or other to obtain material for the analyst to work upon, and in many cases it means a serious loss to do this. Again the cutting up of one article of comparatively small value does not conclusively show that the figures obtained from its analysis apply to the whole delivery of which it is a unit, such is the variation that is so commonly found in deliveries of rubber goods. Thus chemical analysis, on the whole, seems out of the question, and it therefore remains to be seen how far physical tests can be adapted so as to give a fair criterion of the quality of the goods and of their suitability for the purposes for which they are intended, while at the same time no damage is done to the articles by the test so as to unfit them for sale.

To mention some specific cases. It may or may not be matter of common knowledge that the majority of our leading railway companies submit all deliveries of carriage and wagon buffers to severe mechanical tests, and such as fail to reach a certain standard are rejected. It should be mentioned that such tests are only insisted on by those companies who pay a fair price, and expect to get sound rubber. At the present time there are great variations in the prices paid by railway companies for goods intended for the same purpose, three times as much being paid in some cases as in others. We doubt the policy of buying cheap and nasty mechanical rubber, but in the light of what has occurred in other branches of the rubber trade, it is gratifying to find that the railway companies who buy such goods do not expressly stipulate that they shall stand the tests usually applied to the best quality.

This testing of buffers on a large scale, of course, takes time, and involves, in addition, the purchase of rather expensive machinery; but there is no doubt that it pays the buyer. Without going into great detail, it may be said that the buffer-testing machine is on the principle of the ore-stamp, five or six hammers being worked by a cranked axle, and striking blows on as many buffers. The superficial dimensions of the buffer springs are carefully measured before and after the test, which may consist of from 1000 to 10,000 blows, and may last a whole day. A good buffer should measure the same after as before the test, though one of inferior quality, *i. e.*, wanting in elasticity or badly vulcanized, will be found to have sustained a permanent set after the test. It will be seen at once that this test is of more value that any chemical one would be, and it puts the rubber-manufacturer on his mettle, as it is no easy task to get such an equality of vulcanization as is required to conform to the standard of this test. We have known of cases where half a delivery has been returned as unsuitable, though to the best of the rubber-manufacturer's knowledge the material and the method of manufacture were similar throughout.

We rather suspect that variations occur in the rubber which are not to be detected unless by some such severe test as the one under notice, and which could hardly be discovered in the unvulcanized rubber, though this is a technical matter which does not directly concern us at the present moment. It is necessary to add, however, that, whether owing to this inequality in the elasticity or lasting power of rubber buffers, or to other causes, there seems to be a decided revulsion of feeling in favor of steel springs for rolling-stock at the present time, and it behooves the rubber-manufacturers to look to their guns unless they wish to lose a considerable business. We append here some figures obtained by a railway company from a delivery of buffers all supposed to be of equal quality, and they show decidedly that some variation either in the quality of the rubber or in the method of manufacture has occurred:

	Loss after Plates.	Loss after 10,000 Machine Blows.
No. 1	nil	50 per cent.
No. 2	nil	39 per cent.
No. 3	nil	19 per cent.
No. 4	nil	25 per cent.
No. 5	nil	10 per cent.
No. 6	2 per cent.	48 per cent.
No. 7	8 per cent.	43 per cent.
No. 8	17 per cent.	36 per cent.
No. 9	7 per cent.	45 per cent.

The loss after plates, it should be said, refers to the permanent decrease in thickness noticed after the buffers have been screwed up under pressure for a length of time between iron plates, and the percentage of loss refers to the decrease in lifting power or elasticity. For example, a buffer which will lift a weight of six tons before undergoing the machine blows and only three tons afterwards shows a loss of 50 per cent. It is rather exceptional for a delivery of buffers to show such great variations as are given in the table, but the figures show the value of the test from the railway engineer's point of view. Other railway goods, such as vacuum diaphragms, hot-water hose, etc., cannot be so easily tested, though a system of testing high-pressure steam tubing by attaching two or three lengths to steam-jets, and comparing their behavior under pressure, has been adopted with good results, as indicating the temperature and pressure the hose is capable of standing without injury.

Leaving the railway companies, we may glance at some points in the specifications sent out by the Admiralty, who are large buyers of rubber goods, and for whose contracts there is considerable competition. The rubber has to be supplied in the form of vulcanized sheets, and it is cut into valves, washers, etc., as required at the various dockyards. Three qualities of rubber are bought, and the exact amount of rubber, mineral, and sulphur they are to contain is specified, any variation from the figures given rendering the contractor liable to have the goods thrown back on his hands, a contingency which it is unnecessary to say involves him in considerable loss. The testing employed seems to be almost entirely chemical, and the strictness with which the authorities visit any variation from the

limits of sulphur laid down in the specification is carried to a degree which we venture to say is hardly warranted. The idea of a low limit of sulphur is, we suppose, that the goods are less liable to deteriorate when in use by reason of oxidation of uncombined sulphur; but it must not be overlooked that a low content of sulphur necessitates a prolonged vulcanization, and it is extremely doubtful, to say the least of it, whether this prolonged heating is better for the rubber than would be the presence of say, an extra ½ per cent. of sulphur which would tend to shorten the time of vulcanizing.

Some few years ago Lieutenant Vladimiroff, of the Russian navy, made a series of experiments to establish the testing of rubber goods on a sound and satisfactory basis, the following being the main conclusions at which he arrived. It will be seen that the tests advocated are physical ones, as he came to the conclusion that chemical testing gave no reliable results.

I. India-rubber should not give the slightest sign of superficial cracks on being bent to an angle of 180 deg. after five hours' exposure in a closed air-bath to a temperature of 125° Cent. (=257° F.) The test-pieces should be about 6 centimeters thick.

II. Rubber containing not more than 50 per cent. by weight of metallic oxides should stretch to five times its length without breaking.

III. Pure caoutchouc free from all foreign matter, except the sulphur necessary for its vulcanization, should stretch seven times its length without breaking.

IV. The extension measured immediately after rupture should not exceed 12 per cent. of the original length of the test-piece. The test-pieces should be from 3 to 12 millimeters wide, and not more than 6 millimeters thick and 3 centimeters long.

V. The percentage of ash gives a certain indication of the degree of softness, and may form a basis for the choice between different qualities for certain purposes.

Any excess of sulphur over that required for vulcanization should be removed at the works, and should not appear on the surface of any object.

Now these tests on the whole seem very well calculated to give useful indication to engineers as to the quality of the goods they are buying, only we would interpolate here the remark that unless a good price is paid for the rubber it is no use submitting it to such physical tests as these. India-rubber substitutes made from oil, and "recovered rubbers," *i. e.*, old rubber worked up again with oil, have nothing like the elasticity appertaining to new sound rubber, and they are quite incapable of standing the elongation or heat tests mentioned. The concluding remark of the lieutenant is somewhat naïve, and though no doubt it expresses a desirable consummation, we may perhaps be permitted to ask how it is to be effected. No doubt the excess of sulphur over and above that required for vulcanization should be removed, but how is it to be done? In the case of thin goods, consisting of rubber and sulphur only, it is possible and, indeed, is the regular practice, to remove the excess of sulphur by boiling in a solution of caustic soda, but this could not be done in the case of valves or buffers over an inch thick. Of course the alternative to this is the English Admiralty low limit of sulphur, but, as we have already said, we are not particularly enamored of this, and do not feel inclined to recommend its more general inclusion in rubber specifications.

The specific gravity of a rubber compound, or what comes to the same thing, the number of cubic inches to the pound, is very generally taken by buyers as a correct index of the value, though in reality such is often very far from being the case. In the rubber works the qualities of the rubber made vary from floating, the best quality, to densities corresponding to 11 or 12 cubic inches to the pound, the latter densities being in demand nowadays by many consumers with whom price appears to be the main consideration. It will be obvious that such densities as these can only be obtained by utilizing to the utmost the quality that rubber exhibits of taking up a large bulk of added matters.

In Lancashire a common test of mechanical rubber is to throw it into the mill-pond to ascertain its floating power or otherwise. Of course it is all right as discriminating between a floating and a compounded rubber, but the mere fact of a rubber floating does not show that it is necessarily of a good or elastic quality, because it must be remembered that there may be a large amount of extraneous organic matters present in the form of oil substitutes which are of practically the same density as rubber. By such a test a compound containing a considerable quantity of substitute is found superior to one consisting of the best rubber and 20 per cent. of zinc oxide, a conclusion which would not by any means be borne out in practice.

We therefore hold out a word of warning to buyers of rubber goods not to set too much store by this gravity test, as it may very often afford an incorrect criterion of value, though at the same time it is difficult to suggest an alternative test of equal simplicity, or one that does so little damage to the goods. It is, of course apparent that rubber containing 10 or 70 per cent. of mineral will sink equally in water, and it is useful to extend the test by employing solutions of common salt or chloride of calcium which a rubber of approved density will float in, and samples can be compared with this as a standard at any time. Space prevents our going further into this matter of rubber testing, and we shall conclude with the observation that on the whole what the Russian authority says about the inadequacy of chemical analysis is well-founded, and it behooves engineers to work out special mechanical tests easy of application which may serve to convince them that what they are buying is—to use a borrowed expression—of the nature, substance, and quality demanded.

ACTION OF OIL ON COTTON AND RUBBER.

WRITING in the *Gummi-Zeitung*, Dr. E. Schulze reports a characteristic case of damage done by little specks of oil to a rubber cushion. The brown spots which we notice on some cottons are caused by the oil which is squeezed out of accidentally crushed seeds. Proper bleaching destroys these traces of oil. Even in unbleached cottons, this oil causes no harm if the rubber is vulcanized hot. For the cotton oil is, like linseed oil, a substance which tends to become inert by drying. For this latter reason the cotton oil may, on the whole, be regarded as pretty harmless, especially when we consider the very fine state of its distribution. But the following example proves that it may cause trouble: A pneumatic cushion had been stamped with a pattern, and could, therefore, not be vulcanized in the hot; cold vulcanization was inadvisable, because the rubber formed a pretty thick layer. The cushion proved perfectly air-tight for some time; but it became quite useless in two months, the air escaping from a large number of small spots. On further examining the texture, the brown spots due to crushed seeds were noticed, though almost hidden by the finishing process. There seems to be no doubt that the texture had not been properly bleached, and that the oil was responsible for the destruction of the unvulcanized rubber.

RUBBER SUBSTITUTES AND THE ELECTRICAL INDUSTRY.

SUBSTITUTES for India-rubber, from the standpoint of the electrical industry, are treated at length in a recent issue of *The Electrician* (London) by H. L. Terry, of the Society of Chemical Industry, who suggests that there is a widespread desire among inventors to assist the rubber-manufacturer to dispense with all of his legitimate raw material. "Of late years," Mr. Terry writes, "A change has come over the relationship formerly existing between many cable-manufacturers and the general rubber-manufacturers. Several cable concerns which formerly had their rubber sheeting and compounds made by rubber firms have now put down rubber-machinery of their own, not only making their electrical rubber, but in some cases competing in mechanical and other goods with the rubber works. It may therefore be fairly assumed that the majority of cable firms are familiar with the various rubber substitutes which are on the market. Whether they use them for electrical purposes is another matter altogether, and it is a question into which we do not intend to enter. What we have to say is addressed in a general way to those electricians who have to do with the products of the cable or rubber works."

Without including all the materials, natural or artificial, which at some time or another have been proposed as rubber substitutes, the writer confines his attention to those which have been and are now in regular use. He disclaims any particular knowledge as to whether these are used in electrical rubbers, "but in the light of recent developments in the rubber-manufacture, where goods have been made from admixtures which were formerly made of pure Pará rubber, it is impossible to avoid a suspicion that, if such changes have not yet taken place in electrical rubbers, it will only be a matter of time. Of course the primary ôbject of using substitutes is reduction of cost, and it is easy to see that it requires but little of the foreign matter to be added in order to appreciably cheapen the rubber, the pure rubber costing, when cleaned, about 4 shillings a pound, and the substitute about as many pence."

There is a general and growing reluctance among buyers of rubber goods to pay the prices that formerly prevailed, and as the price of raw rubber keeps getting higher, some means have to be resorted to so as to supply the goods at the customers' price. "In many classes of goods," says Mr. Terry, "this process of cutting down prices has been going merrily on for a number of years, and as a consequence the quality of the goods has much deteriorated, though the purchaser still adopts the air of the martyr, and complains that rubber goods are not what they used to be. A reply to such a complaint was recently made by one of our leading rubber firms in the following laconic sentence: 'Compare the prices you paid fifteen years ago with those that you say must not be paid at the present time.' It has been said that in many cases the use of substitutes is warranted on the ground that to use all pure rubber would be a waste of material, and a needless expenditure. This statement certainly has claims on our credulity, though we feel bound to add that it is a question of cost, and cost alone, for in no case can a better article, or one likely to give more satisfaction in the long run, be made from an admixture instead of pure India-rubber."

The rubber substitutes now in use belong chiefly to the class of oxydized oils, and are classed by Mr. Terry in three divisions: Those obtained (1) by the action of oxygen, or air, on linseed oil; (2) by acting on rape oil with chloride of sulphur; (3) by the action of sulphur on rape oil at a high temperature. Of these the first class has but little application in the rubber industry, though its use is universal in the linoleum and kamptulicon industries.

"The product obtained by the reaction under our second heading is one of considerable interest both from a scientific and practical standpoint. The reaction was known about fifty years ago, and some thirty years back formed the subject of a patent, though it was not until the rise in the price of Pará rubber in 1884 to a high figure that its use can be said to have become very general or extended. In appearance it forms a tough, jelly-like mass capable of being ground in rollers to a powder which is easily mixable with rubber to form a uniform mass. A peculiar property it exhibits is that, although quite insoluble in naphtha, it becomes soluble enough when in admixture with rubber, and it has therefore received many applications for water-proofing purposes. Of real elasticity it has none, and its applications, when it is used to any extent, are therefore limited to such purposes where elasticity is not a desideratum. Its use in the manufacture of elastic thread is therefore barred, though this material stands very much alone, we imagine, at the present time, as far as absolute purity of rubber is concerned. The exact chemical composition of this substitute long remained a mystery, though much light has recently been shed upon the matter by one or two chemists who have given special attention to it.

"Those who have been brought into contact with that disagreeably-smelling liquid, chloride of sulphur, will surmise that the manufacture of this substitude is not a particularly pleasant operation, and this is indeed the case, unless the strictest precautions are taken in the matter of ventilation, so as to prevent the workpeople from breathing the fumes. Nor are the troubles arising from the manufacture confined to the immediate neighborhood of the works, for we have known cases where complaints from a considerable distance have brought the manufacture into conflict with the local authorities. We rather fancy the profits formerly derived from the manufacture have dwindled considerably at the present time, owing, in the first place, to competition, and, in the second place, to the fact that many rubber-manufacturers have taken to making their own substitutes."

The substitute produced by boiling rape oil with sulphur until solidification takes place. This product has a blackish brown color, and a somewhat penetrating smell, though its behavior toward solvents, and when mixed with rubber, approximates closely to the substitute last described. It was, and we believe still is, chiefly made in France, and exported to England at a price about half that formerly obtained by the best qualities of the chloride substitute. The defects of smell and color have been remedied of late years to a considerable extent, though the price of the purified product has risen accordingly. Whether from this cause, or from the fact that it is never acid, as is sometimes the case with the other, it is a fact that its use has largely increased of late years. Besides its freedom from acid it is not liable to decomposition with the production of a soft oily substance, as is the other; and, further, its general stability under varying conditions has, in the opinion of Mr. Terry, quite justified the extended favor which has been meted out to it. "Acidity, whether in the sulphur or in the other com-

ponents of a cable rubber, is to be strongly guarded against, as likely to lead to loss of insulating power; and, supposing that the use of substitutes was found expedient in electric rubbers, it certainly seems desirable that only such bodies should be used in which the element of acidity is wholly absent. Of course, we are aware that the copper strands in a cable are tinned, but from the numerous instances which have come under our notice, where the sulphur has attacked the copper, the beneficent action of the tin is not always apparent. As to the dielectric properties of the substitutes, we have not ventured to express an opinion; but until some satisfactory evidence of their utility is forthcoming, it would be rash on the part of electrical engineers to buy rubber mixed with such."

The question is then asked, How is the electrical engineer to defend himself against the possible wiles of the rubber-manufacturer? "In the first place," says Mr. Terry, "if he pays a fair price he may, as a rule, depend on getting the pure article, and need trouble himself no further. If, however, his conscience gives him some qualms on this matter of price, it would be well to get the opinion of a competent man as to the purity, or otherwi e of the goods he is buying." Then he gives a caution with regard to the employment of a chemist. "We certainly deprecate the rather general idea," he says, "that because such and such a man is eminent in certain branches of pure or applied science, his opinion is therefore entitled to weight in any case that may come before him. The tendency of modern scientific studies is towards specialization, and it would tend to his own benefit if the buyer of India-rubber goods recognized this fact as clearly as buyers of other classes of goods have recognized it."

Commenting upon the article by Mr. Terry, *The Electrician* makes some suggestions of a rather more practical character than anything advanced by that writer. The editor says:

"The statement that if the user pays a fair price he may depend on getting a good article does not carry much conviction with it. These rubber substitutes are usually the subject of patents for which a high price has been paid, and on which high profits are expected to be made; so that, though the cost of the material of which they are composed may only be a twelfth of that of the corresponding Pará rubber, this ratio does not necessarily apply to the cost of the manufactured article. Again, for most electrical purposes 'compound' or 'vulcanizing' rubber is used, which is by no means pure rubber, but must contain a large percentage of other ingredients, and in consequence the above-mentioned naturally prefer to quote prices of the same order as those of other makers and be satisfied with higher profits. The other method of protection Mr. Terry suggests to the rubber-user is to have the material examined by a chemical expert. But this is costly; it involves a delay in buying, and, as Mr. Terry himself suggests, such an analysis presents difficulties which are in some cases almost insurmountable.

"Mr. Terry has, we fear, rather a misconception of the position that must be taken up by the rubber-cable buyer. It does not matter to this latter gentleman of what ingredients the compound is made, he has only to consider the *properties* of the substance finally submitted to him. He knows by experience that a judicious mixture of India-rubber, sulphur, litharge, and French chalk will, when properly treated, suit his purpose better than pure rubber. Pure rubber would be dearer, but the compound rubber would be more durable. Electrical tests suffice in many cases to detect a want of homogeneity, and tests of mechanical strength present no great difficulty. What is wanted is a test for durability; one that will so intensify the destructive action the rubber is submitted to under ordinary conditions that a few hours' treatment will enable one to form an estimate—and a very rough estimate would be sufficient—of the life of the material."

ENCOURAGEMENT FOR RUBBER-CULTURE IN CEYLON.

THE new director of the royal botanic gardens of Ceylon—Mr. John C. Willis—is a believer in the cultivation of India-rubber as practicable at least for that part of the world. His initial report, recently published, has won high praise from the usually critical *Tropical Agriculturist*, of Colombo. While not underrating the value of the purely scientific work in botany performed by Mr. Willis's predecessors, the *Agriculturist* is pleased at the evident disposition of the new director to devote his attention to the more practical department of economic botany. What appears particularly to interest our contemporary in the new report is the prominence which is given there to the subject of rubber culture. We will quote from the journal first—from the report afterward:

"All he [Director Willis] tells us of rubber is much to the point and will afford the best possible guide to intending cultivators," says the *Agriculturist*. "Dr. Morris has lately been telling Jamaica planters he could not seriously advise them to commence cultivating 'rubbers' in view of the enormous development behind Lagos and in other parts of Africa of sources of supply from original forests. And there is no doubt much in this, especially in regard to the West Indies, where they have (at least in Jamaica) the prospect of cultivating a variety of products for the immediate supply of the finest market in the world, namely, the United States. But in Ceylon Mr. Willis's sober statement of fact is by no means discouraging to the actual, or intending, rubber-planter. Indeed, fifty trees of Pará rubber per acre, well cared for, should yield after ten years a regular annual harvest of 100 pounds, worth £12 or £13 (or even £10) in London. Rubber culture would be preferable to and far more profitable than that of cocoanuts. The expense of attending to 70 to 80 palms, harvesting, etc., must be as great as that of dealing with 50 Pará trees, including tapping, etc., while the gross return, even at a liberal estimate for the nuts, is well nigh 100 per cent. more in the case of rubber. There is, therefore, clear encouragement to go into 'rubber' with the Pará kind, provided suitable land be carefully selected and the work of planting properly attended to."

One of the smaller of the Ceylon gardens—that at Heneratgoda, consisting of thirty-nine acres—was opened originally as a nursery for Pará rubber, being supposed to be especially fitted, with respect to low elevation, warm temperature, and heavy rainfall, for this species. Mr. Willis states that an immense number of plants of the *Hevea brasiliensis* are now cultivated in Ceylon, the progency of the original trees still at Heneratgoda. The process of rubber-tapping is to be seen at the garden early every Saturday morning.

"The several gardens contain a large collection of rubber-trees of all kinds," says Mr. Willis. "About 3½ acres at Heneratgoda are devoted to experimental plots of Pará rubber of various ages. There are many hundreds of thousands of trees now in cultivation in Ceylon and elsewhere, but none are yet ready for harvesting. In anticipation of the time when this

will be the case I have commenced an important series of experiments at Heneratgoda, with a view to solving, if possible, the following, among other questions: How often should a tree be tapped? What are the best times of year and of day to tap? What is the best method of tapping? What is the best way of curing the rubber for the market? What is the effect of manure and other circumstances on the yield of rubber? Can rubber be profitably obtained from the leaves, and if so, how best? What is the labor-cost per pound yield? and so on. These experiments will probably continue over several years, and results will be published from time to time."

At another place the report says: "The tree of Pará rubber [at Peradeniya] which was tapped in 1894 was again tapped this year, yielding 3 pounds and ¼ ounce dry rubber, or rather less than in 1894. The yield of this tree has been 27¾ ounces in 1888, 42 ounces in 1890, 45 ounces in 1892, 51 ounces in 1894, 48¼ ounces in 1896; total in nine years, 13 pounds 6 ounces, or about 1½ pounds per annum. The tree is now twenty-one years old, and should bear tapping every year. I desire to call special attention to this yield, for many persons entertain the most exaggerated ideas of the rubber-yielding capabilities of this and other trees. Of course a much larger yield can be obtained for one or two years, but it is at the sacrifice of the life of the tree. If the results of the tapping of this tree be taken as a basis, the yield of a rubber-plantation after the tenth year (fifty trees to an acre) should be perhaps 100 pounds of rubber per acre per year, worth about £12 or £13 in London. In comparing this with other products it should be remembered that the labor cost of rubber is very small.

"The cultivation of Pará rubber seems likely to succeed in the low-lying wet districts of Ceylon. There seems little likelihood at present of any serious fall in the supply of rubber from wild sources, but the demand is increasing, and by the time that the private plantations in the East come into full bearing, it is quite probable that the easily accessible native sources will be becoming exhausted.

"Little reliable information is at present available on the subject of rubber, and I am devoting what time I can spare from other duties to a series of experiments in cultivation and tapping of rubber at Heneratgoda and Peradeniya. These were commenced at Heneratgoda in December chiefly on a plantation of eleven- or twelve-year-old trees, which, being planted only 12 feet apart, are now much too crowded. About 150 of them will be sacrificed in the course of the experiments, leaving more room for the remainder."

Several plants of Lagos rubber (*Kickxia africana*) were received from Kew in 1896, but are not doing well. This species forms a stout tree, and is therefore suited to cultivation, but it will be a long time before seed is available in quantity. At the Badulla garden a specimen of *Hevea brasiliensis* seven years old is 40 feet high and 30 inches round. There are other points of interest on rubber in the report.

THE INDIA-RUBBER TRADE IN AUSTRALIA.

By Frank W. N. King.

THE supply and demand for India-rubber in the whole of Australia doubtless is very insignificant to American eyes. The annual sale of articles made purely or wholly from India-rubber and imported into the Colonies within a year cannot be said to reach $500,000 (including rubber for bicycle-tires). The two largest items of consumption of India-rubber are for government purposes and in the cycle trade. The India-rubber supply trade is chiefly with the houses importing electrical and telegraph supplies. As there seems to be a larger quantity of rubber goods used in Victoria than in the other colonies, and the prospects are that such goods will increase in consumption as time goes on and population increases, I will devote this letter to the rubber trade and those connected with it in Melbourne. This city, with its fourteen suburbs, has a greater manufacturing fraternity within its boundaries than the "mother" colony capital—Sydney, New South Wales.

To give THE INDIA RUBBER WORLD'S readers an idea of just what is imported into Victoria in rubber-wear I give a statement from government sources for the year ending December 31, 1895:

FROM—	No. of Packages.	Value.
United Kingdom	1,606	$341,610
Germany	50	3,875
United States	48	2,760
France	3	140
Belgium	2	165
Total	1,709	$348,550

In "Waterproof and horse clothing" the United States sent two packages, valued at $25. Rubber shoes form the principal item of rubber imports from the United States, having amounted during the year 1895 to 811 pairs, valued at $2720. Such small rubber goods as elastic bands, erasers, anti-rattlers, etc., came mostly from Germany.

Freight charges from the United States have lately been as low as $3 per ton, but it is generally on an average from $3.60 to $4.37. The freight by American sailing ships from New York direct to Melbourne, in 90 to 100 days, will probably be found less than the rates charged by sailing ships from Liverpool, to this port, which are between $4.37 and $5 per ton.

According to the latest government statistics (1895) there are nine waterproof-clothing factories in Victoria—all in Melbourne—employing 270 persons, of whom 220 are females. The weekly wages paid during 1895 to males of twenty years of age and over averaged $8.87, and to females of twenty years and over, $4.50, while the average week's pay, for 48 hours, to all factory employés in that trade, was $4.30.

The leading makers and importers of waterproof clothing (and "oil-skins") in Melbourne are:

Eilenberg & Zeltner, William street.
H. Glass, No. 530 Elizabeth street.
B. Glass, No. 16 Queensbury street, North Melbourne.
J. H. Thompson, Burns lane.
Levy Bros., Franklin street.
E. S. Helwitz, Wright's lane.
Alfred Baker, No. 367B Little Bourke street.
Richard Louis, No. 134-6 Flinders lane.
William Adams & Co, Nos. 521-523 Collins street.

The importers of India-rubber goods in Melbourne are: The India-Rubber, Gutta-Percha, and Telegraph Works Co., Limited, James Wilson, manager; John Slater & Co.; J. Newton & Co.; and H. Zumstein (mechanical lines).

For the interest and use of United States exporters in rubber goods, the following is a list of such goods as are imported,

and the customs duties (1897) in the various Australian colonies. It will be remembered that since January 1, 1897, New South Wales is a free port, or on the same footing as Great Britain in relation to tariff dues:

DESCRIPTION.	Queensland.	South Australia.	Tasmania.	Victoria.	West Australia.
Rubber erasers.....	25%	free	15%	free	15%
Rubber hose.....	15%	free	15%	free	free
Rubber stamps.....	25%	free	15%	*a* 20%	20%
Rubber cushions.....	25%	25%	15%	free	15%
Rubber tubing.....	25%	10%	15%	free	10%
Anti-rattlers.....	25%	free	15%	free	15%
Rubber puffers.....	25%	free	15%	*b* 30%	15%
Waterproof clothing..	....	..	....	35%	....
Rubber shoes.....	....	....	....	*c* $2.88	....
Rubber mats.	25%	25%	15%	30%	10%
Gutta-percha, raw....	free	free	15%	free	15%

a—With metal frames. *b*—If attached to metal; others free. *c*—Per dozen pairs.

There are two small firms in Melbourne that repair rubber boots and shoes and offer to sole same.

The Melbourne agency of the Dunlop Pneumatic Tire Co. have announced that they will give up the branch of tiring carriage-wheels. No wonder, when there are not half a dozen carriages in the whole of Victoria that have rubber tires, and the observer need not look far to know the reason. The prices charged for tiring carriage-wheels were most "clinchingly" out of proportion to the value of material and cost of labor in Australia to-day. The latter is still, and has been for a long time past, at a great discount, skilled mechanics working for $10 a week.

The *Australian Tropiculturist* for March has a special article on rubber-growing, referring to the industry as a new fortune-promising one and calling upon the government to plant up all available costal areas, since "flat alluvial river lands are regarded as the best soil for India-rubber trees."

Melbourne, July 8, 1897.

RUBBER DEVELOPMENT IN BOLIVIA.

NEW LAWS RELATING TO RUBBER-TREES.

THE new laws in Bolivia regulating the concession and ownership of rubber tree lands, being more liberal than any previous laws, are expected to attract foreign capital for the development of extensive regions, scarcely explored as yet, where rubber-trees grow wild. This is important in part because of the jealousy with which the production of rubber in the adjoining regions of Brazil is guarded. The production in Brazil is restricted to citizens of that country, and the Bolivians hope, by a more liberal course, to attract capitalists who may have been deterred from engaging in the rubber business only by the lack of opportunity. The salient features of the decree of the Bolivian congress follow:

All rubber-trees not privately owned belong to the national domain. Natives and foreigners alike have the right of exploring for such trees. Concessions are granted by *estradas* (groups of 150 trees), of which the local authorities may grant as many as 500 to individuals or as many as 1000 to incorporated companies. Large grants may be made by the legislature. Grantees must pay to the federal government annually 1 boliviano for each *estrada*, for fifteen years, after which they can acquire full ownership upon paying for recording title. The same rights may be acquired earlier by the payment of all the installments. [The face value of a boliviano is 96½ cents, gold; present exchange value, 40 to 45 cents.] Discoverers of rubber-trees, who establish the fact, shall have preference as to the concession thereof. Penalties are provided for persons in possession of rubber-trees not legally obtained. The roads leading to grants of rubber *estradas* are declared to be of public use. Grantees of rubber lands cannot compel their laborers to accept clothing or food on account of wages. Nor can laborers be deprived of their personal liberty or subjected to corporeal punishment. Laborers who contract any disease in the rubber camps of grantees are entitled to medicines at the expense of the latter.

A copy of the new laws has been sent to THE INDIA RUBBER WORLD by Señor Don José Vicente Ochoa, minister of public instruction and colonization, at Sucre, Bolivia, who will be pleased to correspond with any one who cares to investigate the development of the rubber industry in that country.

NOT AN ATTRACTION TO AMERICANS.

OF interest in this connection is the following letter from an important member of the crude-rubber trade, to whom has been referred an inquiry from an INDIA RUBBER WORLD subscriber about the prospect for engaging profitably in the gathering of rubber in South America:

TO THE EDITOR OF THE INDIA RUBBER WORLD: There is no question that there are millions and millions of untapped, and one might say unowned, rubber-trees in the Amazon valley. The steady increase in the rubber crop from year to year is an indication of this. When one considers that the Amazon drains a territory nearly as large as the United States of America, and our limited knowledge of that sparsely-settled country, it is at least safe to believe that unowned rubber-trees in vast numbers are there.

I believe also that the gathering of rubber at present prices must be extremely remunerative to gatherers who are on the spot, have the proper connections, understand the business, and proceed upon business principles. But there are many difficulties and drawbacks. The character of the native population, the lack of trustworthy labor, the enormous distances through virgin forests, and streams difficult of navigation, through and upon which the rubber has to be transported to the distant market; the same difficulties which have to be overcome in a greater degree, because of upstream transportation on supplies to be taken into the region upon which to subsist; the hot, enervating climate; and last, but not least, the danger to health of those personally conducting the business, all have to be taken into consideration.

I have in mind the experience of one who probably was the most successful of all rubber-gatherers in Bolivia, where the very best "Pará rubber" is produced. This gentleman, while himself living in Bolivia, made what was supposed to be a vast fortune in gathering rubber. He moved to London, leaving his business in the hands of his brother and relatives. They in turn either died or moved away, and he himself undertook to conduct the business from London. He has recently died. It is found that his fortune, if he has any left, is all in the woods, thousands of miles in the interior, and owing to the laws, or lack of them, or the difficulty of administrating them, it is doubtful if any of his fortune will be preserved to his heirs. In spite of all this, however, there is unquestionably money in the business, but the drawbacks are great.

Naturally, since the establishment of our branch house at Pará, we have devoted serious study to the methods of busi-

ness best calculated to further our profits. The whole subject of acquiring concessions of rubber-trees and employing gatherers, with a view to becoming rubber-producers on our own account, has been gone over carefully, more than once. It is only necessary to say that we are still content to remain buyers of rubber at Pará and Manáos, to express our idea of the feasibility of outsiders engaging largely at this time in rubber-gathering in the great Amazon wilderness.

A. H. ALDEN.

New York, July 17, 1897.

The Bolivian gentleman to whom Mr. Alden refers was Francisco Saurez, whose death in London was reported in THE INDIA RUBBER WORLD for June 10 (page 248). His rubber concessions in Bolivia were nearly 3000 miles from the seaboard, over a large part of which distance the only method of communication was by mule-riders. Consequently, while Mr. Saurez was doing business in London, it took six weeks for a telegram and four or five months for a letter to reach his plantation.

CAPITAL SECURED IN EUROPE.

FROM recent English journals it is learned that Señor Don Adolfo Ballivian, of La Paz, Bolivia, has been in Europe, where he has succeeded in securing the support of some powerful English and German capitalists for a great company for colonizing the northwestern territories of Bolivia and the exploiting of their rubber resources. In a recent INDIA RUBBER WORLD, under the heading "Another Outlet for Bolivian Rubber," mention was made of a cartroad which, under Señor Ballivian's direction, is being opened around the rapids of the Madeira. The *South American Journal* (London) had recent advices that the road had reached the length of 112 miles, about two-thirds of the contemplated distance, and that the completion was expected by the end of 1897. As the trade develops, it is expected that a railway will be laid along this road. Señor Ballivian, by the way, is a personage of eminence in his country, both his father and grandfather having been presidents of Bolivia, and he is a man of intelligence and great energy.

BRAZIL CONCERNED ABOUT HER BOUNDARY.

THE interests of the state of Amazonas, Brazil, are seriously threatened by the protocol of the joint commission appointed to mark out the boundary line between Brazil and Bolivia, which, if approved by the Brazilian congress, will cut off from Amazonas one of its most productive regions, and one that, more than any other, has contributed to the increase in the production of rubber in the last few years. The navigable head-waters of all the great rivers which contribute to the growing rubber market at Manáos are situated in Bolivia and Peru, and rubber which comes from beyond the Brazilian boundary is not subject to the Brazilian export duty. For this reason the press of the latter country is protesting against the adoption of the report of the commission. The government organ of the state of Amazonas estimates at about $1,000,000 the annual loss to the revenues of the state that would result from the adoption of the proposed new boundary line.

NOTES ON PRODUCTION.

MOLLENDO rubber to the amount of 18 tons (about 40,000 pounds) arrived at Liverpool during June. This rubber is produced in the upper Beni region of Bolivia and transported overland to the Peruvian seaboard. The best prices realized were 3*s.* 3*d.* and 3*s.* 4½ *d.*, while fine Bolivian rubber received from the usual sources (via Pará) sold as high as 3*s.* 7*d.*

A delegation sent recently by the Peruvian government to investigate the India-rubber industry in the department of Loreto, which includes the port of Iquitos, reports that this year upwards of 1,500,000 kilograms (=3,300,000 pounds) will be exported from there. This comparatively new industry for Peru, the report says, may be expected at no distant date to assume great importance, on account of the handsome profits now being made by the exporters.

RECENT TRADE PUBLICATIONS.

LEIPZIGER GUMMI-WAAREN-FABRIK. [LEIPZIG UND] BERLIN. [Ornamental thick paper. 4⅜″×5½″. 46 pp. and folder.]

THE Leipsic Rubber-Goods Factory (Leipsic, Germany) was founded in 1864 and has since maintained a successful career. The copy of their handsome catalogue now before us bears on its title-page their Berlin address, being issued from their extensive branch store in that city, but the principal location of the business remains in the same town with their factory. The catalogue is printed neatly throughout in two colors, which is a helpful guide to readily detecting the leading particulars about each article described. The list embraces clothing, footwear, mechanical and technical goods, and druggists' and stationers' sundries. The body of the catalogue is rather solidly printed in small letter, the illustrations of the leading products being reserved for a large folder inserted at the end. By the way, this list includes, besides the products of the Leipsic factory, a variety of Russian, English, and American rubber goods kept on sale in the Berlin store.

[CATALOGUE.] THE MECHANICAL RUBBER CO., SUCCESSOR TO Chicago Rubber Works, Chicago. [Paper. 3⅜″× 6½″. 48 pp.]

TIGER TIRES. THE MECHANICAL RUBBER CO., CHICAGO. [PAPER. 6″×3¾″. 16 pp.]

THE first of these pamphlets contains about everything to be found in any other catalogue of mechanical rubber goods, and some things not to be found elsewhere. The company have the advantage of being located in a great distributing center, while their competitors must ship goods a thousand miles or more to compete in the same market. The "Tiger" tire is the latest addition to the Chicago company's products, but the prestige which they enjoy as rubber-manufacturers and their wide selling connections have enabled them at once to take rank in the trade as makers of good tires. These are manufactured under the Tillinghast patents.

THE GOODRICH RUBBER EXPRESS, THE QUICKEST TRAIN IN THE World. [The B. F. Goodrich Co., Akron, Ohio.] [Paper. 4″×6″. 12 pp.]

THIS unique advertising p oduction is devoted mainly to the advantages of a supposititious railway train made entirely of rubber. At the end, however, the author pauses to remark that until this new equipment can be adopted in its entirety, the railway people cannot do better than buy the Goodrich brands of rubber air-brake hose, springs, and brake-hanger rubbers; car-heating, locomotive, and tank hose; window rubbers for cars, sash and cushion rubbers, packing, gaskets, etc.

DRUGGISTS' SUNDRIES. SYRACUSE RUBBER CO. FRANK C. HOWlett, Syracuse, N. Y. [Paper. 4⅝″×8″. 248 pp.]

THIS is a compendium of the whole line of druggists' goods, embracing more than a thousand cuts, each appropriately though concisely described, with a price annexed. More than 300 references are given in the index to the book. All the leading manufacturers in this line are represented in the goods

listed, though prominence is given, in several cases, to the goods branded "Candee Manufacturing Co." The goods thus branded are principally syringes and atomizers, and their manufacture is controlled by Mr. Howlett. This catalogue is different, by the way, from the price list of druggists' rubber goods issued by F. C. Howlett & Co., Buffalo (N. Y.), noticed in the June INDIA RUBBER WORLD, and represents a different department of the business of this enterprising rubber-man.

CATALOGUE NO. 7.—EXPORT. RUBBER ALPHABETS CO., MERIDEN, Conn. [Paper. 7"×10". 8 pp.]

BESIDES rubber type in a great variety of sizes and styles, this company offer cases and other supplies for sign-printing and goods-marking outfits, including a special adjustable gage, for the neat alignment of work. Their list includes inks, also. It is evident from their catalogues that their business has reached large proportions.

CATALOGUE NOTES.

CATALOGUES of rubber-manufacturers and others are solicited by the American Catalogue Bureau, Cleveland, Ohio, who advise THE INDIA RUBBER WORLD of their intention to open bureaus of information on industrial and business subjects in several leading cities. They suggest that, under their plan, the firms favoring them with catalogues will be more than repaid by the benefit derived from such publications being placed on file for free reference.

=Hutchinson & Cie. (1 Rue d'Hauteville, Paris) have favored us with three of their price-lists, covering (1) rubber overshoes; (2) lawn-tennis shoes; and (3) canvas shoes with rubber soles.

=The Boston Belting Co. send us a handsome card describing the advantages of their widely-known "Phoenix" flange and joint packing.

OUR ENGLISH CORRESPONDENCE.

JOSEPH MOSELEY, of Cringle Hall, Levenshulme, Manchester, England, the head of the firm of David Moseley & Sons, India-rubber manufacturers, died suddenly of pneumonia at his residence, on August 3, at the age of 62 years. He and his brother, the late Charles Moseley, succeeded their father, David Moseley, in business, having been associated with him, in fact, in the starting in a small way of a cloth-proofing plant in Rusholme road, some forty years ago. The outgrowth of this undertaking was the Chapel Field Works, at Ardwick, Manchester, which were greatly enlarged by the two brothers after their succession to the business. At this time somewhere near 1500 work people are employed there in the production of mechanical and other staple rubber goods.

As a citizen, a business man, and a magistrate Mr. Moseley was widely-esteemed. The funeral, which occurred on August 6, was largely attended, including many leading citizens and fellow-members with Mr. Moseley of various organizations. The cortege was headed by sixteen carriages filled with representatives of David Moseley & Sons, and was met at the cemetery gates by 1000 employés of the firm, walking four abreast, who escorted it to the family vault. The deceased was a Conservative in politics and a member of the Church of England.

THE LATE JOSEPH MOSELEY.

It is expected that the business of David Moseley & Sons will be carried on by the sons of Joseph Moseley, who have been actively concerned in the affairs of the firm since the death of their uncle, Charles Moseley, on October 1, 1887.

* * *

AT the first ordinary general meeting of the Dunlop Pneumatic Tire Co., Limited, held lately in London, Chairman Du Cros said, in relation to their costly patent suits: "With regard to the legal expenses during the eighteen months, some 210 writs were issued on behalf of the company, and 119 injunctions obtained on behalf of the company, and a great many minor cases settled without these extreme decisions. But while a great number of these injunctions were not very serious, among them the company fought seven what I might call great actions. . . . The costs incurred in defending the patents, through which the company earns a great deal of its profits, amounted to no less than £45,000, and up to the present the company had only recovered in damages £2387." The patents owned by the company stand on their books as having cost £367,809 12*s.* 3*d.*, or about $1,840,000.

* * *

THE strike among engineers in Great Britain has affected some of the rubber factories directly, in depriving them of hands, besides threatening to lessen the demand for goods, through the stagnation of other industries. The engineers who went on strike at the works of the India-Rubber, Gutta-Percha, and Telegraph Works Co. (Silvertown), have been replaced by free labor, at the old scale of wages.

* * *

THE Telegraphic Construction and Maintenance Co., Limited (London), have paid an *interim* dividend of 5 per cent., and hope to pay as much more in January, as usual.

The directors of the W. T. Henley's Telegraphic Works Co., Limited (London), have declared an *interim* dividend for the half-year at the rate of 6 per cent. on the ordinary shares and 7 per cent. on the preference shares.

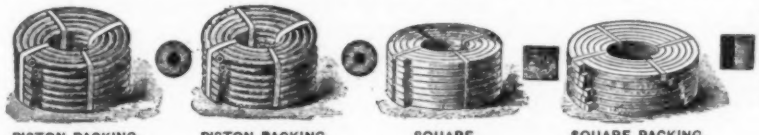
* * *

THE Mexican Rubber Co., Limited, have been registered in London, with a capital of £10,000, to acquire and turn to account, in Mexico and elsewhere, lands suited to India-rubber and other products. John Taylor & Sons, engineers, No. 6 Queen's street place, E. C., are the directors and managers.

The Colonial Rubber Estates, Limited, have been registered in London, with £100,000 capital, to enter into an agreement with the British and West African Rubber Concessions Syndicate, Limited, to acquire and develop rubber-bearing and other lands, in Africa and elsewhere.

PACKING AS A PRODUCT OF THE RUBBER FACTORY.

THERE are some rubber-manufacturers who believe that, in respect to the volume of production, the various kinds of packing hold first place among the goods known as "mechanicals," though most others give the palm to belting or hose. At any rate, the outturn of packing must be very large, in view of the necessity for its use in every steam-engine, and in all grades of hydraulic apparatus above the common every-day pump. To one who considers the number of engines and pumps and valves at work in the world, the claim need not appear extravagant that single American rubber concerns produce hundreds of tons of packing within a year. If the cash returns for all the packing sold bore a closer relation to the "list" prices, there would be little need for the rubber-manufacturers to organize to prevent their business from becoming unprofitable. But it happens to be in packing that the greatest recklessness has prevailed in the granting of discounts, so that no other rubber product now reaches the consumer at so small a return for the value. Not all the packing in use is manufactured by the rubber-men, but they prepare at least the "gum core" for a large share of the goods produced in outside factories. While some of the rubber companies keep in stock only certain standard grades of packing, others have exerted themselves to create and maintain a reputation for specialties in this line. It is impossible in one article to describe or even mention all the brands of packing in the market, or to do much more than to suggest some of the differences between types.



PISTON PACKING, ROUND CORE. PISTON PACKING, SQUARE CORE. SQUARE PISTON PACKING. SQUARE PACKING, RUBBER BACK.

[From the Catalogue of the Boston Belting Co.]

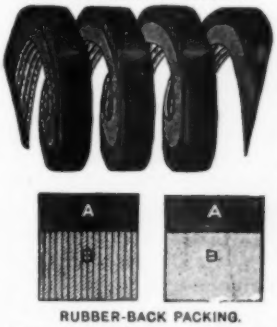
First in the history of packing was its use for steam-pistons. "The great desideratum in a piston," says an engineering writer, "is that it should admit of no leakage, and have as little friction as is consistent with this indispensable quality." Watt, the father of the steam-engine as a practical device, tried to arrive at these results by the use of metallic packing, but with so little satisfaction that he gave it up. A number of metallic packings were patented subsequently in England, however, though before the middle of this century they began to be displaced largely by vegetable and animal substances—specifically hemp and leather. Engineering works of that period show cuts of pistons "packed with unspun long hemp, or soft rope, prepared for the purpose, kept supplied with melted tallow by means of a funnel on top of the cylinder-lid." The use of India-rubber and cotton-fiber packing is of comparatively recent date. But, having engaged the ingenuity of some of the most important of the inventors in rubber, and possessing decided merit, the increase in its use has been steady and rapid. What is known as flax packing yet retains an important place in the trade, however, while so recent a work as Dr. Thurston's "Manual of the Steam-Engine" says: "Metallic packing is much used on large piston- and valve-rods, and especially on large engines, and, with good workmanship and proper care, is next best to none. Fibrous and compounded packing, containing asbestos, paper, and rubber, is more usual." As for piston packing proper, Mr. Otto C. Reyman writes in the *Journal of the Franklin Institute*, for August: "Modern practice in steam-engineering, however, has settled on metal packing; . . . modern practice has discarded all hemp packings . . . in steam-cylinders." But for piston-rod and valve-rod packing rubber and hemp remain greatly in vogue.

ELASTIC RING PACKING. SECTIONAL RING PACKING. SPIRAL PACKING.

[From the Catalogue of the Garlock Packing Co.]

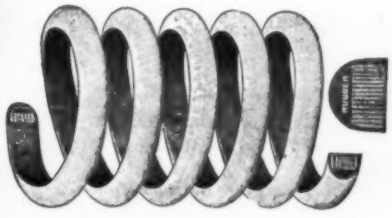
With the advance of time the range of use of packing has been broadened until that for piston-rods is only one of the many kinds produced. Most manufacturers begin their enumeration with "Rubber Sheet" packing, described also as "Cloth Insertion" or "Plain" packing. The advantage in the use of India-rubber wherever steam, air, or water joints are to be made is that no other substance has so much elasticity and stands so high a degree of heat, in addition to being impervious to ammonia and alkalies. Rubber sheet packing is an indispensable article to the engineer, in conveniently keeping his steam machinery and flange joints in proper working condition. No satisfactory substitute can be found where the iron surfaces of the joints are rough or uneven. Packing made with cloth insertion is in wide use for steam joints, and the steady increase in the yearly production is an evidence of its value. There is a price at which it is regarded by many as the most economical packing to use. Such packing should combine smoothness of finish, strength of cloth insertion, pliability, and durability. The cloth is used either as a true insertion, or on one or both sides of the rubber. Such goods are made in thickness from $\frac{1}{64}$ to $\frac{1}{4}$ inch, and one ply of cloth is used to every $\frac{1}{16}$ inch. This packing is made generally in rolls about one yard wide and 20 yards long, though orders are accepted at some factories for double this width and any length desired. The various manufacturers catalogue a standard grade of

SELF-LUBRICATING PACKING.



RUBBER-BACK PACKING.

[From the Catalogue of the New York Belting and Packing Co.]



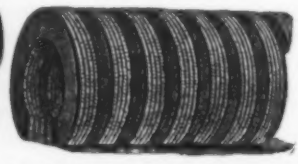
PACKING FOR AIR-BRAKE PUMPS.

[From the Catalogue of the Gutta-Percha and Rubber Manufacturing Co.]

rubber sheet packing, at a uniform price. Two or three, however, have adopted special brands for their product, and offer different grades at different prices. There is also in the trade what is known as the "navy special" quality, made in accordance with navy-yard specifications, and a "diaphragm packing," having a particularly heavy cloth insertion, and selling at a much higher price than the standard.

The grades of packing just described are made, in the same dimensions, with wire insertion, for use under certain conditions. Such use is chiefly in hot joints, where a cloth-insertion packing might be rotted or burned by the heat. Owing to the amount of strain which a small strand of wire will withstand this class of packing is obviously stronger and more durable than the cloth-insertion. In most price-lists the wire-insertion is appreciably higher than the other; in a few the prices are identical; while one leading firm offers wire-insertion packing for less money.

SPIRAL PISTON AND VALVE-ROD PACKING.



SQUARE SPIRALLED PISTON PACKING.

[From the Catalogue of the Peerless Rubber Manufacturing Co.]

Pure rubber sheet packing, or valve gum, is the same material as above described, with the omission of the cloth or wire insertion. This is a standard article in the trade, only one or two manufacturers designating their product in this line by special brands. Goods are kept in stock one yard wide, and from $\frac{1}{64}$-inch to 2 inches in thickness, while extra dimensions may be ordered. Sold by weight, the pure rubber sheet costs about twice as much as the insertion packing.

GARLOCK'S HIGH-PRESSURE PACKING.

What is called self-vulcanizing packing is intended to be put into steam-joints unvulcanized or in a semi-vulcanized state, becoming hardened by means of the heat with which it comes into contact. It has been brought into existence to meet a particular demand for a packing without cloth insertion which would prevent leaks where the ordinary sheet packing failed. Because of its unvulcanized condition, it conforms more freely to rough surfaces, and insures a perfectly tight joint. It can be used between unfinished cast-iron flanges, thus saving the cost of turning and planing them. This packing is carried in stock in thicknesses from $\frac{1}{32}$-inch upwards, and is generally to be had also with wire insertion, while two or three manufacturers will accept orders for it with cloth or duck insertion.

In addition to the various classes of packing already described, the leading rubber-manufacturers produce, as their highest grade, a sheet packing for general use for flanges and joints, selling usually at a higher price than the so-called standard sorts. If there could be included in one brand all the various desirable qualities of rubber sheet packing, it might be described about as follows—and it may be added that all these claims are made for some goods on the market: It is a soft and tenacious compound, retaining its pliability under all circumstances, conforming readily to rough and uneven surfaces; it can be removed and re-used, when it will pack as well as when first inserted; it is a non-conductor, not burning or charring, and not hardening under exposure to heat; it will not blow out under high steam pressure; it is impervious to the action of oils, ammonia, liquors, alkalies, or steam; it is equally suited for packing hot or cold joints—air, steam, or water. Some of the special brands of packing offered for such general use are the "Phœnix," by the Boston Belting Co.; the "Pyramid," Gutta-Percha and Rubber Manufacturing Co.; the "Usudurian," Revere Rubber Co.; the "Red Rose," Home Rubber Co.; the "Walrus," Manhattan Rubber Manufacturing Co., the "Antimony," New Jersey Car Spring and Rubber Co.; the "Ruby," New York Belting and Packing Co., Limited; and the "Rainbow," Peerless Rubber Manufacturing Co. With the exception of the first-named brand, these packings are not supplied with wire or cloth insertion.

The original round Tuck's packing, for the piston-rods and valve-stems of steam-engines and pumps, was one of the pioneers, and is now made by almost everyone. It is economical when made properly and at a price which admits of using good materials. It is best made of heavy frictioned cotton duck wrapped around an India-rubber core, or center, and vulcanized solidly together. It is made in lengths of from 12 to 20 feet, and from $\frac{1}{4}$-inch to 2 inches in diameter. It is also made, sometimes without the rubber core. Patents for piston and piston-rod packing, of various fibers woven or wrapped about a rubber core, were granted in England to John Henry Tuck, in 1852 and in 1854. He was the founder of the important rubber-manufacturing firm of Tuck & Co., who are still in business in that country.

The standard square piston packing, made of alternate layers of India-rubber and duck, is in equally general use. A special quality is made by some companies for steam-pumps and hydraulic elevators.

The canvas rubber-back packing is the same as the square piston packing, with the addition of a rubber back. The construction of square packings is such that only the edges of the fabric are presented to the piston-rod, which insures the minimum of wear. The rubber back, being elastic, keeps the other part against the rod with sufficient pressure to be steam-tight, and yet create but little friction.

Hydraulic square piston packing is made on the same principles as standard square, but a finer duck is used. It is made to order for steam-pumps, in several grades—usually soft, medium, hard, and extra hard. It is furnished at the same price as square packing by some firms and at an advance by others.

METALLIC STOP-VALVE PACKING.

SQUARE SPIRAL PISTON PACKING.

[From the Catalogue of the Peerless Rubber Manufacturing Co.]

Spiral piston packings are generally square, made of successive thicknesses of cotton duck firmly cemented together, and presenting the edges of the fabric to the piston-rod, as in the case of standard square packing. Being made in a continuous coil, and shaped to the rod and box, the engineer is spared all trouble of bending the material to fit its place. The spiral packing may also be made with a rubber back, which performs the same service as in the case of the square canvas rubber-

back packing. There are also spiral packings, both square and round, with gum core. Some specialties in spiral packing that cannot be described particularly will be shown in the illustrations. The chief points of a good piston packing, by the way, are (1) minimum of wear; (2) snugness of fit, to prevent the escape of steam; (3) ease of adjustment; (4) self-lubricating properties. The latter are provided by saturating the whole packing with a lubricating compound that will feed itself automatically to the rod as needed.

The remaining forms of packing are the "elastic ring" and "sectional ring," made in sizes to fix exactly the rod and the box. The first is adapted particularly to use where the piston-rods are true and smooth, and the stuffing-boxes and glands properly beveled. The sectional ring packing is adapted especially for rods out of line, and places that are very difficult to keep tight.

Braided flax packing is used particularly for water-ends of pumps and for hydraulic elevators, but is also regarded by many as a good steam packing. It is best made of flax of long fiber, firmly woven, the manufacture requiring special machinery. After leaving the braiding-machine, the lengths are passed between iron rolls so shaped as to square the packing. The flax is next run through a steam-heated tank containing beef tallow, which adds the necessary lubricant, after which the packing is complete. Packing made from good flax should be soft and pliable. To quote one manufacturer: "It does not score the rods as do hemp and jute, nor scatter and dissolve, as do asbestos, plumbago, and soapstone packings." Such a packing, if properly applied, will absorb moisture and expand, and "the gland is just right when it allows a very slight escape of drip or 'sweat', thus keeping the stuffing-box tight with very little friction on the rod." It is claimed that, in the interest of cheapness, some of the so-called Italian-flax packing is made of jute, in addition to which it is loaded unnecessarily with tallow. Philadelphia has been called the home of flax packings, but within three or four years past a Chicago firm (W. D. Allen & Co.) have begun their manufacture on a considerable scale, and with success. Two or three rubber-manufacturing-companies, especially, list flax packings among their products. A five-pound box of ¼-inch standard flax packing contains 144 feet, while ten pounds of 1¼-inch packing are only 13 feet. List prices range between 75 and 50 cents a pound, according to quality.

Flax is used also for some of the gum-core packings, especially to meet the demand for hydraulic or cold-water packing, or for situations where ammonia is present. In the manufacture of this article, the round core is made of the best compounds used in sheet packing, the fiber of Italian flax, and the lubricant of fine tallow, air-floated graphite, and other materials. This costs more than the braided square flax packing, but is said to last very much longer, the gum core serving as a cushion and thereby preventing wear. Eighty feet of this, in the ¼-inch size, weigh five pounds; the price is $1 a pound, list.

One rubber company brings out special brands of gum-core flax packings, with flat and round core. They also offer a combination packing of cotton duck in conjunction with circular-woven flax, backed up with a special elastic compound. This is called high-pressure packing and is listed at $1.50. The merit claimed is that the flax will absorb all moisture and oil from the cylinder, thus keeping the packing moist and in good condition.

Several concerns outside the rubber trade make a specialty of the manufacture of packings. The Garlock Packing Co. (Palmyra, N. Y.) have a patented hot-oil process for the treatment of India-rubber and cloth stock for packing. They make "elastic ring," "sectional ring," and "spiral" packing, the first two under patents; also the Garlock "high-pressure" packing, for marine engines, made of fiber and metal in combination with their packing compound, in ring and spiral form, and the Garlock "hot-water" and "cold-water" ring packing, the latter involving the use of flax. The Garlock packings are also made specially for ice and refrigating plants, where ammonia is used.

The product of the Crandall Packing Co. (Palmyra, N. Y.), also manufactured under patents, is lubricated in cold oil, by hydraulic pressure, "which thoroughly saturates the fiber without weakening the gum; the packing coming out tough and elastic." They make an automatic or sectional ring packing, in sizes from ⅝ inch to 30 inches, and expansion coil packing.

ASBESTOS STEAM PACKING.
[From the Catalogue of the H. W. Johns Manufacturing Co.]

The Gould Packing Co. (East Cambridge, Mass.) make what they claim is "the original ring packing," under a patent of June 1, 1880—"self-lubricating, steam and water tight, [and] causes less friction than any other." The Gould packing is sold not by weight, but by the inch in length of stuffing-box.

The Phœnix Steam Packing Co. (New York), manufacture an "anti friction and self-lubricating" packing for pistons, valve-rods, and governors. There are two kinds of gum-core packing—white and black—and one of hemp core. No tallow or animal grease is used, but only "such lubricants as will stand the highest degree of heat, combined with plumbago and talc."

The Goodsell Packing Co. (Chicago), make a packing of a combination of braided flax and woven duck, the whole supported by a cushion of India-rubber back of the wearing surface. They make also a "special hydraulic" square and a "special hydraulic" rubber-back packing. In these packings, the flax, acting as a reservoir for the oil and moisture, is supported by a firmer material on either side.

No doubt every firm in the trade will agree with the language of one manufacturer, that "an absolutely perfect packing has not as yet been devised," although the animal, vegetable, and mineral kingdoms have been ransacked to find the substances that would best withstand the many trying conditions met with in every-day service. For example, almost every sort of earth has been used in the manufacture of packings. There are in use to-day, in packing, graphite, zinc, lead, brass filings, infusorial earth, asbestos, oxide of iron, aluminum, mica, bone-black, whiting, antimony, wood-pulp, soapstone, and kaolin, each chosen in the hope of giving the product some peculiar heat-resisting or other desirable quality.

But no matter how packing is made, or of what it is composed, it is not certain to give satisfaction in every case. Some of the most usual complaints against this class of goods were capably treated in an article headed "Why Some Packing Does Not Pack," published in THE INDIA RUBBER WORLD of January 15, 1892, and written by Robert Grimshaw, an eminent authority in the field of mechanical engineering. The sum of his conclusions was, in brief, that very many steam-engine conductors do not know how to use packing, or at least, that they do not know how to choose the packing best suited for their particular needs.

NOTE.—In making choice of illustrations from various catalogues, our contributor has had no intention of showing preferences, his only object being the selection of the material most conveniently accessible for illustrating a considerable range of types of packing. The output of nearly every important firm making packing includes most of the different types shown here.—THE EDITOR.

RANDOM NOTES FROM PARA.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Intelligence has reached here of the arrival at Rio of a steamer bearing new cable for the Amazon Telegraph Co., also of the departure from London of the Messrs. Siemens's cable-laying ship *Faraday*, with 589 miles of cable. I hear from an unofficial source that in relaying the Amazon cable, the dangerous rocks and the effect of the river currents will be avoided by following a course nearer the shore.

The leading rubber-exporting houses of Par, on August 4, issued a circular to the firms in the interior engaged in supplying them with rubber, the principal contents of which follow:

"Owing to the careless preparation of rubber, especially Islands rubber, we are receiving by each foreign mail letters of complaint and demands for reclamations from our consignees. We are convinced that the cause of this depreciation in the quality of rubber is the bad system beginning to be adopted largely by the *seringueiros* (rubber-gatherers), of heating the milk and using any kind of wood as fuel for smoking it. As is now generally known, proper smoking is the most important element in the preparation of rubber. Therefore we must strongly recommend to collectors or supply-men to observe that the *seringueiros* use exclusively for smoking rubber the urucury nuts, or some similar fuel, and that they absolutely prohibit the heating of the milk, mixtures of tapioca, lemons, etc. We also observe that the use of improper materials in the preparation of caucho has greatly prejudiced this article; indeed, some manufacturers abroad have refused to continue its use. We remind you, therefore, that henceforth the classification here will be vigorous, and that all doubtful rubber will be classed as *sernamby*."

The circular is signed by Pusinelli, Prüsse & Co., Rud. Zeitz, La Rocque da Costa & Co., Denis Crouan & Co., R. F. Sears & Co., and Adelbert H. Alden.

The revenues of the state of Pará—derived mainly from the duties on rubber and other exports—for the fiscal year ending June 30 last amounted to 13,935:973$988, against 11,041:412$569 for 1895-96. The rate of increase was 26 per cent., which was more than maintained during July, the first month of the new fiscal year.

The arrivals of India-rubber at Manáos during the first eleven months of the last fiscal year—the figures for June being omitted—amounted to 24,430,384 pounds.

Messrs. A. Berneaud & Co., one of our rubber firms, gave free passage on their steamers to a battalion of troops from Manáos to Pará, on their way to Canudas, the seat of the war in Bahia.

The new English consul, Mr. William Churchill, has arrived at Pará. The states of Pará, Amazonas, and Maranham are now united in one consular district in the British service.

GRAO PARA.

Para, Brazil, August 14, 1897.

BICYCLE-CHAIN LUBRICATION.

THE ideal lubricant should not only lubricate the chain and sprockets, but the pivots or pins holding the links of the chain also. Lubricants made from pure flake graphite are superior to any other, when properly made. An article combining a perfect lubricant and rust preventive, put up in convenient form, is something desired by every bicyclist. To all such, Dixon's *Graphitoleo* will be not only welcome, but indispensable. Dixon's *Graphitoleo* is a preparation of a very choice graphite finely pulverized, and a pure petrolatum warranted not to gum or become rancid. It is put up in collapsible tubes and is manufactured only by the Joseph Dixon Crucible Co. (Jersey City, N. J.).

RUBBER-TIRED PRAYING-WHEELS.

TO so great an extent have the Japanese adopted European methods and models that an enterprising Buddhist has adapted the bicycle to serve the needs of the praying-wheel as used by the followers of his creed. Instead of attaching the written prayer to the customary wheel which is generally turned by a convenient stream of running water, the new vogue is to fix the prayer to the hub of the bicycle wheel, so that the faster the rider can pedal the better he can pray. Although there appears to be a spice of sacrilege in the practice, it is apparently catching on, for rumor has it that American firms are already preparing machines with Buddhist collects embossed on the tires, so that the bicycle will become an instrument of pleasure and a prayer-book combined.—*St. James Gazette* (*London*).

CHEAPER CABS.—The recent introduction of 25-cent cabs on the streets of New York by the Pennsylvania Railroad Co. is about to be imitated by the Erie and New York Central companies. It is expected that in consequence the fares charged by cabs generally will be reduced, leading to an increased use of these vehicles. As the railroad companies' hansoms are of the best construction, equipped with rubber-tires, the outlook is of interest to the rubber trade.

NO JAPANESE FOR BRAZIL.—The Pará state government has invalidated the contract with the Cia. Orienta de Immigraçao e Commercio for the introduction of Japanese laborers. It is alleged that the company has failed to perform its contracts in the time proposed. The company decline to accept the decision, but will bring suit. The opinion of the rubber trade is that the Japanese would not be suited for rubber-gathering.

NEW GOODS AND SPECIALTIES.

RUBBER COLLARS AND CUFFS.

THE Economy Collar & Cuff Co., of Cleveland, Ohio, is marketing a line of so-called rubber collars, cuffs, shirt fronts, and ladies' belts which present a decided similarity to well laundered linen. It is claimed that goods of this manufacture will not turn yellow, as does celluloid, are sufficiently pliable, and astonishingly durable. Of course, they do not wilt in the warmest weather, and when soiled are easily cleaned with a damp cloth and common soap. The retail price of collars is 35 cents each, and of cuffs, 65 cents per pair.

A PEDAL-RUBBER.

THE illustration herewith is of a form of pedal-rubber manufactured by the Reed & Curtis Machine Screw Co., Worcester, Mass. When this rubber is fastened on the pedal the tread always comes central with the lines of the pedal-plate; the manner of fastening is such that the rubber cannot spring out, as happens sometimes with some other forms. The adjusting feature, allowing the rubber to be completely used up, will be appreciated by those who do not wish to buy new treads every few weeks. They can be used singly, or in pairs; in the latter manner the pedal is balanced, and can be more readily picked up.

THE WILMOT PNEUMATIC CUSHION.

Although the pneumatic saddle is meeting with signal success, especially among those riders who seek comfort as a primary consideration, there is still a very great number of bicycle riders who like a saddle that is firm and unyielding, and who have very fixed ideas about its form and fit. In order to meet the demands of both of these tastes Wilmot & Co., Detroit, Mich., are putting on the market the pneumatic cushion shown by the cut herewith. It will be seen that the rider may have the style of saddle which pleases him most, with the effect of a pneumatic saddle. It is claimed that this pneumatic cushion (which is 1½ × 2¼ inches in size) takes up all the vibration from the spokes, preventing shock and injury to the nerve centers and arteries coming near to the saddle. Price $4.00.

THE "PERFECT" PNEUMATIC CUSHION.

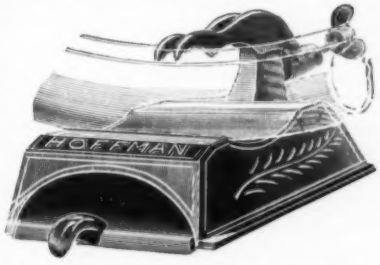
The Perfect Pneumatic Cushion & Spring Co., 13 High street, Boston, Mass., are manufacturing a pneumatic cushion designed to be applied to the ordinary bicycle saddle. The makers claim that it is readily attached to or detached from any ordinary saddle, is perfectly secure when adjusted, and is easily inflated when on or off. For pommel saddles it has three independent air compartments, one of which covers the pommel, insuring a soft pommel that can be inflated to suit. This division of the saddle into separate compartments also obviates the rocking sometimes experienced with pneumatic saddles of the single compartment type.

THE ELASTIC LEG-CUFF.

AN article of great utility to bicyclist, golfer, equestrian, angler, sportsman, and to athletes generally, is the Leg-Cuff, manufactured by the Hub Gore Makers, Boston, Mass. The accompanying illustration will show the manner of wearing. Being elastic, it is self-adjusting, fitting equally as well over thick or thin trousers. The material being woven, it does not sweat the ankle, but allows of a free circulation of air. The cuff comes in practically all colors, including the latest fashionable shades of tan, English hunting red (sealing wax red), and forest green. Packed one-half dozen to the box.

THE HOFFMAN VULCANIZER.

THE Hoffman Vulcanizer illustrated herewith is of a compact and very business-like appearance. The heating fluid is wood alcohol, graduated to produce 240 degrees Fahrenheit. The heating surface, or radiator, is of aluminum, while the frame, or tire holder, is of gray iron, enameled and ornamented. The intention is to vulcanize the tire without removing it from the rim, or the rim from the frame. The price of the complete outfit for vulcanizing, with Pará rubber in sheets with canvas backing, and in solution, is $5. Manufactured by C. C. Hoffman & Co., 73 Hanover street, Boston, Mass.



SOME GOLF SPECIALTIES.

WE illustrate herewith the Spalding golf ball, and three handy specialties to accompany it. The ball is made of the finest Gutta-percha, thoroughly seasoned. They are perfect in flight, and uniform in weight. Figure 2 shows a rubber pouch made to contain a wet sponge, allowing the player to clean the ball when he so desires. This pouch is water-tight, and is cleanly and convenient. Figure 3 is a mold in which the balls can be remolded and turned out equal to new. Made in two sizes, 27, and 26½. It is claimed to be the only thing of the kind on the market. Figure 4 is a golf-ball holder—a convenient little contrivance for holding the ball while painting. Manufactured by A. G. Spalding & Bro., New York.

FIG. 1.

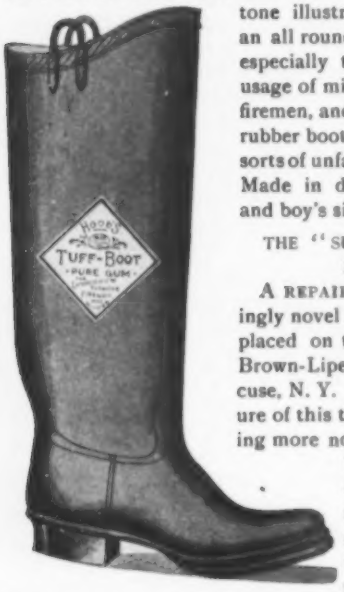
FIG. 2.

FIG. 3.

FIG. 4.

THE "TUFF" BOOT.

THE Hood Rubber Co., Boston, Mass., have added to their line of rubber foot-wear the "Tuff" boot shown in half-tone illustration herewith. This is an all round heavy duck boot, made especially to withstand the rough usage of miners, farmers, lumbermen, firemen, and others requiring a rubber boot for wear under all sorts of unfavorable conditions. Made in dull finish in men's and boy's sizes.



THE "SURE THING" TIRE MENDER.

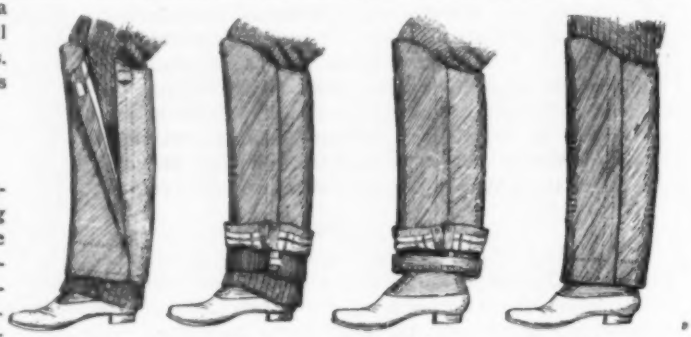
A REPAIR kit which is pleasingly novel and simple is being placed on the market by the Brown-Lipe Gear Co. of Syracuse, N. Y. The essential feature of this tire mender is nothing more nor less than rubber bands. By the use of a longitudinally slotted and grooved needle, small rubber bands are forced through the wall of the tire, and drawn out through the puncture. The bands are stretched to their fullest tension, and when released from the tool form a rubber head both inside and outside. Their constant tendency to contract lengthwise, and expand sidewise, makes a permanent closing of the puncture. No cement is used. The tool for inserting the bands looks like a large sewing-machine needle, with an opening on one side of the eye, in which the bands are hung, and pushed through the tire and drawn out.

THE "RUBBER NECK" SADDLE.

IN THE INDIA RUBBER WORLD for April 10 last, we illustrated and described in this department the "Bunker" saddle, showing the cellular construction of the rubber cushion by which the effect of a pneumatic saddle is attained in an non-inflated saddle. The manufacturers, the Bunker Saddle Co., 208 Lake street, Chicago, Ill., are now bringing out a modification of their "Bunker" saddle, known as the "Rubber Neck." The principle of the honeycomb construction is retained, but the general shape is somewhat altered. The pommel is narrow, and is soft to the extreme tip, while the air spaces or cells extend from the base-plate to the cover throughout the whole area of the saddle. The retail price is $3, but the manufacturers are sending samples for introductory purposes at $2 each.

FISHER'S STORM LEGGING.

THIS article is intended to supplement the mackintosh and rubber shoes in protecting men against rainy weather. Ordinarily, when one is obliged to be out of doors on a wet day, no matter how well supplied otherwise with waterproof coverings, no protection is afforded to the lower limbs and the trousers—a fact likely to result in much discomfort and to threaten the health. This legging, which may be made of any waterproof cloth, is attached to the trousers and not to the leg of the wearer, neither pressing nor binding, and allowing a free circulation of air between the trousers and leg. It is put on and taken off with ease, is claimed not to crumple the trousers, and when worn with a long overcoat or mackintosh, has the appearance of the lower part of a complete pair of trousers. The legging is fastened and held in place by steels, fitting under strips on the canvas flap, as shown in Figure 1. When it is put on, the bottom of the legging is turned up all around, as far as it will go, exposing a canvas flap beneath, as in Figure 2. The bottom of the trousers leg is next turned up evenly around this canvas flap, as in Figure 3. Finally the bottom of the legging is turned down over all, and a spring button fastening is snapped together, giving the appearance indicated in Figure 4. Manufactured by Charles Fisher & Co., No. 112 Sutter street, San Francisco, and No. 471 Broadway, New York.

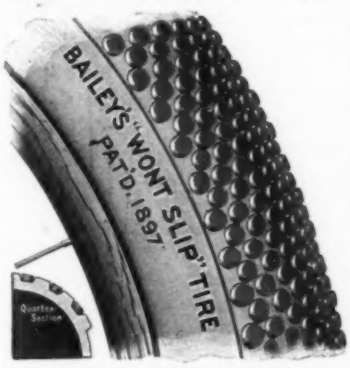


THE "W. & B." RUBBER-PAD HORSESHOE.

THERE is illustrated here, for the first time, a new rubber-pad horseshoe, brought out by the manufacturers of the Gibbs rubber-cushioned shoe, several forms of which have been described in THE INDIA RUBBER WORLD. This new shoe differs from any other in the market in that the rubber pad is expanded at the heel, thus affording a frog pressure, and presenting practically a "bar shoe," which is admitted by veterinarians generally to be the best form of the iron shoe. This new feature is claimed, also, to correct the tendency of the horse's foot to contract, as it always does when shod in the ordinary way with iron alone. Hitherto, in order to secure the frog pressure, rubber-cushioned horseshoes have been constructed with a pad which covered the entire sole, excluding the air, and tending, in the opinion of many veterinarians, to a diseased condition of the foot. In the construction of this shoe regard has been had to its wearing qualities, and the experiments which have been made with it indicate that the rubber parts can be counted on to last as long as the metal frame. The general principal of construction is the same as the Gibbs shoe—a perforated iron frame being used, with the rubber cushion below and above the iron forming one mass and being vulcanized together. There is more rubber, however, and it is so placed as to better withstand the wear. While the new shoe will cost more than other kinds in the market, it is expected that the increased cost will not interfere with its use on horses in the fire, police, and ambulance services in cities, on private coach teams, and for the delivery service of the better class of stores. Made by the Whitman & Barnes Manufacturing Co., Akron, Ohio, and No. 111 Chambers street, New York.

THE "WON'T SLIP" TIRE.

MR. C. J. BAILEY'S fertility as an originator of new and novel ideas in rubber is almost proverbial in the rubber trade. One of his latest ideas is soon to be placed on the market by him in the shape of an entirely novel tread for bicycle tires to which he has given the name of "Won't Slip." This tire is born of a practical experience of many years as a bicycle rider, coupled with a superior knowledge of the possibilities of rubber. The illustration here shown will give a good idea of the peculiarity which gives this tire its name, but a few words as to its properties, demonstrated by several months of actual riding tests, will be pertinent. The "Won't Slip" tire is made of the highest grade of stock, and it will not slip under any conditions of surface, such as wet car-rails, asphalt, concrete or macadam road, and the inventor further guarantees that it can be ridden on ice without slipping. It is a much easier tire to ride on a rough road, such as pavements or rough macadam, as the teeth form a kind of cushion supplementing the pneumatic cushion, and it is much swifter over a smooth surface, as it gives a clear air space between the surface of the tire and the road, thus destroying the suction, which is always present with other tires. The tire is 90% puncture-proof when under pressure, and throws less mud than plain ribbed or scored tires, as the teeth, when relieved of pressure, release the mud directly on the surface. Because of the much greater thickness of the wearing surface the "Won't Slip" is much more durable than the ordinary tire.



Another application of the same principle is to a cane and crutch tip brought out by Mr. Bailey, as the illustration shows. This tip won't slip on any surface, even smooth ice, or mar the most highly polished floor. The teeth form a cushion, thus making it much more resilient than the old form. The tip is made in five sizes, ⅛," ¼," ⅜," 1," and 1⅛," and sells for 30 cents per pair. Manufactured and marketed by C. J. Bailey & Co., 22 Boylston street, Boston, Mass.

THE "NOVELTY" REPAIR TOOL.

PLUGS, as means of closing minor punctures in single-tube tires, are rapidly being replaced by the thick, plastic rubber compounds which harden when exposed to the air. The tools for inserting this compound into the tires are many and ingenious, one of the most compact being that made by the Clark Novelty Co., Rochester, N. Y., which is specially advantageous in that it can be operated entirely with one hand, leaving the other free to manipulate the tire. A nozzle is inserted into the tire, and the notch-cap, shown in the illustration, is turned to the left. This forces a plunger towards the top of the cement tube, injecting the cement into the tire, while at the same time the action is such that it brings the cement so that the turning needle-point makes a veritable button of the rubber on the inside of the tire. The tool can be re-filled with cement by simply unscrewing the cap and filling it from the ordinary tin tubes, and as it is air-tight, the solution can be kept for an in definite time without hardening.

NOT GENERALLY KNOWN TO THE TRADE.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I enclose a clipping from one of our local newspapers, informing an old subscriber how to handle rubber. There are some things in this that are not generally known to the trade, and it might be of interest to some of our friends to know how to melt vulcanized rubber. You will be pleased, I am sure, to have this information, so that you can answer similar inquiries correctly.

H. O. C.

Bridgeport, Conn., June 24, 1897.

Old Subscriber.—How may I cast hard rubber; that is, get it into fluid state in order to give it form?

If your hard rubber has been "vulcanized," you cannot do anything with it except by using great heat—a temperature of more than 160° C. (320° F.) being required to soften it. If your rubber is raw, it must be soaked for a long time in hot water, then cut in slices and impurities removed; then rolled and washed again and again, then dried in a warm room for several days; then masticated and forced into solid blocks for storage. To use the masticated rubber it is cut into very thin slices. These may be vulcanized now, or after they are made into the desired shape. The vulcanization is difficult to do exactly. Sulphurs in some form and heat are the principal requirements. If you are going into the business, get some book on rubber working, if not, try heating your hard rubber and grease the molds slightly that you use.

RUBBER IN GERMAN EAST AFRICA.

THE governor of German East Africa has issued an order regulating the sale of India-rubber, which will go into effect on January 1. The intent of this order, which has the recommendation and sanction of commercial circles, is the preservation of the rubber-yielding plants, and the perpetuation of the good reputation for quality which the rubber from German East Africa now enjoys in the markets of the world. The principal clauses are:

The adding of any substance not actually unavoidable in the gathering of rubber, for purposes of gain, such as sand, gravel, bark or pieces of wood, or the treatment of rubber with water, is prohibited. Every ball of rubber offered for sale on the coast must be slit to the center, at least. The so-called pira-ya-chini (root rubber) and pira-ya-cuponda (rubber obtained by boiling the peeled-off bark) must not be brought to market. Adulterated rubber, balls of rubber coming into market on the coast and shipped, which are not slit, root rubber, and boiled rubber will be confiscated and destroyed. Regular traders who sell rubber mentioned in section 4 will be subject to a fine of 100 rupees or imprisonment, if unable to pay. Violations of section 1 of this ordinance will be punished by a fine of 1000 rupees and imprisonment for two months.

BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

THE appropriate patents embraced in the issue from the United States patent office, for the month now in review, are herein set forth to an extent sufficient to enable one to gain a general idea of the nature of the respective inventions, embodying India-rubber or Gutta-percha, and to form a judgment as to the advisability of looking more particularly into any patents.

TIRES.

No. 585,661.—Means for Healing Punctures in Pneumatic Tires. Sola B. Dunn, Chicago, Ill.

A self-healing tire in which one non-solid substance is contained within the tire while another non-solid substance is held in a chamber contiguous to the tread, the two substances being adapted to form a clot when brought together.

No. 585,679.—Bicycle Tire. Samuel Kohn, Chicago, Ill.

Directed to means for closing the slit in a tire casing, and consisting of metallic strips provided with guides upon both sides of the slit, in one of which guides a sliding bar moves, hooks upon the bar engaging with the opposite guides and the bar then being locked.

No. 585,870.—Pneumatic Tire. Jacob R. Johns, Denver, Pa.

An overtire or armor, consisting of a number of plates each curved laterally and longitudinally and formed with rib-like projections, the ends of each plate overlapping and underlapping the contiguous ends of adjacent plates and the series of plates being attached to the tire proper by a helical spring.

No. 586,924.—Device for Inflating Pneumatic Tires. Ernest V. Peirson, Newark, N. Y.

A coin-controlled apparatus for inflating pneumatic tires, the organization including a storage tank connected by an automatically operated valve with a receiving tank which in its turn discharges into a supplemental tank or reservoir, via a coin-freed device, a distributing pipe provided with means for attaching a tire being connected through a coin-controlled device with the supplemental tank.

No. 585,939.—Tire for Velocipedes. Julius Deborde, Hanover, Germany.

A series of hollow resilient balls are connected one with the other by a covering-web twisted into a string between the balls, and inserted in a suitable exterior tube, the spaces between the balls being filled by a yielding mass.

No. 586,267.—Wheel for Vehicles. Mark D. Goodwin, Philadelphia, Pa.

Interposed between an inner two-part rim and an outer rim formed of a series of plates flexibly jointed together and carrying a rubber tire, are a number of coiled springs.

No. 586,342.—Pneumatic Tire. Frank R. Chamberlain, Newton, Mass., assignor to the Newton Rubber Works, of West Virginia.

Covers an inner inflatable tube for tires and a method of forming the same in which partially vulcanized crude rubber caps with wedge-shaped ends are placed on the ends of a mandrel and connected by a tube body of crude rubber which is then vulcanized, and the mandrel withdrawn through a slit in the tube.

No. 586,400.—Bicycle-Tire. Albert Schwehr, Sandusky, Ohio.

A number of hoop-shaped springs connected one with the other by a connecting strip and flexible tapes, form a reinforcing means for a hollow rubber tube.

No. 586,509.—Cycle-Tire. James McConechy, Glasgow, Scotland.

The tire here set forth embodies an inner air-tube, an outer removable cover or casing having along the inside of its tread portion a continuous pocket, and a band of cork filling the pocket and made up of layers of cork of increasing width, the cork strips at their ends being provided with a suitable lubricant.

No. 586,600.—Cycle-Wheel. Duane N. Gleason, Brooklyn, N. Y.

Seated in a longitudinal channel in the outer face of a metallic rim transversely corrugated, is a coiled spring, externally of which and the inwardly turned longitudinally corrugated edges of the rim, there is arranged a flexible tire.

No. 586,830.—Leak-Stopper for Pneumatic Tires. Percy E. Matthes, Philadelphia, Pa.

The stopper is formed from a strap of flexible inelastic material, provided with buckle and tongues, the strap having a piece of flexible air tight material cemented at some of its edges only to the strap, while placed upon the inside of the flexible air tight material there is cement.

No. 586,853.—Device for Drawing Air-Tubes into Tire-Casings. Harry S. Lewis, Chicago, Ill., assignor to the Morgan & Wright, same place.

Comprises a plug and a sleeve between which the tube end may be gripped and locked, and a string secured to the plug.

No. 586,962.—Process of Rendering Textile Pneumatic Tires Puncture-Proof. Lee H. Slodder, New York, N. Y.

The textile material of the tire is immersed in a solution of lime and water, then dried and passed through a solution of alcohol and gum sandarac.

No. 587,009.—Pneumatic Tire. Louis J. M. Loisel, Tergnier, France, assignor to Michelin & Co., Clermont-Ferrand, France.

An air chamber enclosed within an outer envelope, and of larger dimensions than the envelope whereby its walls are puckered or gathered within the envelope, is in contact externally with a lubricating and packing liquid inclosed between the interior of the envelope and the walls of the air-chamber.

No. 587,075.—Pneumatic Tire. Alfred H. Crockford, Dartford, Eng.

A suitable mixture of bran and water is put into the air-tube of a pneumatic tire and distributes over the inner surface of the tire when the wheel is in motion.

No. 587,174.—Pneumatic or Cushion Wheel for Velocipedes. Henry C. Bevan and William R. James, Blaina, England.

The invention here set forth comprises the combination of a pair of rims, a pair of air-tubes between, pintles extending from hub-end to hub-end and forming the connection between them, and toggles pivoted on the pintles at their inner ends and pivoted to the rims at their outer ends.

No. 587,211.—Means for Closing Leaks in Pneumatic Tires. Frederick J. Jones and Gwendolen W. Jones, Kings Heath, England, assignors to the Tyre Puncture Curing Syndicate, Limited, London, England.

A sealing agent of pyroxylin dissolved in amyl acetate and amyllic alcohol with addition of glycerin, treacle, or the like, is designed to be held in the tire.

No. 587,244.—Tire. William D. Snow, New Milford, N. J.

A cushion portion provided at each side with a resilient flange, normally projecting inward, has a flexible shell outward from the tread of the cushion portion with its side edges respectively connected to the flanges.

MECHANICAL GOODS.

No. 585,861.—Hose-Reel. Edward Cliff, Newark, N. J.

A reel adapted to receive a hose connected at one end to a stationary nozzle is mounted upon and connected to a valve-stem projecting from a valve-casing, the reel upon revolving being adapted to open and close the valve.

No. 586,113.—Hose-Covering. Anton Bott, Danville, Ill.

Consists of a series of sleeves or thimbles encircling the hose, each sleeve or thimble comprising a main cylindrical portion connected to an enlarged portion by an angular portion, the

enlarged portion of each sleeve or thimble encircling the main cylindrical portion of an adjacent thimble.

No. 588,161.—Lawn-Sprinkler. Isaac W. P. Buchanan, Lebanon, Tenn.

At the top of a frame or stand there is mounted a horizontal frame which can be rotaled and in which there reciprocates a bar to which a hose may be secured, the hose above the horizontal frame hanging over to one side and by the pressure of the discharging water caused to describe an arc, reciprocate the bar to which it is attached, and effect a partial turn of the frame.

No. 588,955.—Hose-Nozzle. Joseph Askins, Ridgefield, N. J.

A casting formed with a cylindrical bore controlled by a valve plug is provided with a cylindrical delivery passage, and a flattened delivery passage arranged laterally to, extending longitudinally of and having its mouth approximately coincident with the mouth of the cylindrical passage.

DRUGGISTS' SUNDRIES.

No. 586,650.—Water-Bag. Roger W. Woodbury, Denver, Colo.

A stopper with an annular groove is held in the neck of the bag by the contraction of the material, and provided with a valve seat in which works a valve operated by a countersunk button.

No. 586,657.—Syringe. John A. Groeninger, St. Louis, Mo.

Within a suitable reservoir is arranged a cylinder provided with a plunger which is adapted to operate upon the liquid not directly, but through the medium of air which it compresses.

BOOTS AND SHOES.

No. 586,155.—Pneumatic Shoe-Sole. Julia F. Bascom, South Milwaukee, Wis.

A removable expansible bag having an inflating nozzle or valve is inserted in a heavy flexible shell of impervious material having the general outline of the entire underside of the shoe, a roughened upper surface and a continuous upper bead, the shell having a slit closed by a lacing string.

No. 586,452.—Shoe. Laurance F. Norman Newton and Edward E. Bennett, Boston, Mass.

A number of rubber plugs attached to a slip or half sole by metallic fastenings project through perforations in an outer sole.

No. 584,866.—Pneumatic Overshoe. Joseph A. Flint, San Francisco, Cal.

A horseshoe provided with a pneumatic tread or sole and from which extends an elastic upper fitting the hoof.

MISCELLANEOUS.

No. 585,434.—Mattress. Linford F. Ruth, Connellsville, Pa.

An expansible and collapsible air-tight mattress-casing having its upper and lower walls connected by sheet or plate stays and its end portions bent or creased between the stays whereby when distended the surfaces shall be practically continuous and unbroken and when collapsed or drawn together the end folds shall all be inward and inside the general contour of the casing.

No. 585,862.—Vehicle-Fender. William H. Gregg, St. Louis, Mo.

The body of the outer section, including the striking and the holding or receiving portions is made of solid rubber.

No. 586,132.—Cape for Gossamers. Frederick G. Lane, Philadelphia, Pa.

A cape provided with means for securing it in place to a gossamer, and also having fastening means along the side edges and upper and lower draw-strings whereby the cape may be converted into bag form to hold the gossamer.

No. 586,558.—Elastic Horseshoe. Mathew W. Lowes, Marine City, Mich.

The horse-shoe is made entirely of rubber with the rear ends of its sides yieldingly connected by a cross piece or frog of triangular form.

No. 586,696.—Soft-Tread Horse Shoe. Lionel D. Saxton, Philadelphia, Pa., assignor to Louis Goodman, New York, N. Y.

The under side of the shoe is provided with a number of grooves filled with cushions of fibrous material and rubber, whilst a horizontal rim is provided for the nail holes.

No. 586,739.—Molding for Edges of Stairs. Charles E. Knapp, Brooklyn, N.Y.

A nosing of rubber bent or curved to fit the stair edge is secured to a canvas lining for the purpose of fastening the same to the carpet and stair.

No. 586,998.—Storm-Protector. George W. Harmer, Pleasantville, N. J., assignor to Peter B. Risley, same place.

Space for the circulation of air between an outer waterproof covering and an inner textile lining is afforded by a woven wire fabric.

No. 587,058.—Rubber-Dam Clamp. Samuel E. Knowles, Alameda, Cal.

The skeleton frame of the holder is of triangular shape and composed of a longer arm or member with rounded dam holding ends at the ends, two shorter arms or members forming a loop by their junction, with a sleeve covering the same, and a cross-bar in front of the loop.

No. 587,223.—Head Rest. Stewart D. McKelvey, Canton, Ohio, assignor to Frank E. Case, same place.

A pneumatic pad formed with a central depression rests upon a supporting plate of conformable shape and is enclosed by a cover, the supporting plate being engaged by a screw which secures the same to a supporting cup.

No. 587,224.—Head-Rest Pad. Stewart D. McKelvey, Canton, Ohio, assignor to Frank E. Case, same place.

In an annular groove in the upper side of a pneumatic pad provided with a central depression and a bridge piece maintaining such depression when the pad is inflated, is seated the drawing cord of a removable cover.

No. 584,220.—Pneumatic Handle. Seward M. Gunsaul, Omaha, Neb, assignor to the S. M. Gunsaul Co., same place.

A flexible air-tight handle casing is provided with a threaded stem screwing into a nut in the end of the handle bar, a nut being inserted between the end of the handle bar and the casing, enclosing the former and clamping the inturned edge of the casing between itself and an abutment on the stem.

No. 584,855.—Elastic Horseshoe. Ellery C. Davis, Crookston, Minn., assignor of one-third to George Vine, Ivor A. Krohne, Thomas G. Thompson and Halvor Steenerson, same place.

One or more metallic pieces formed with nail holes constitute a lining for the fullering or nail-hole crease in a body of rubber or other similar elastic material.

No. 584,939.—Rubber Compound. Carl V. Petraeus, Joplin, Mo.

Finely powdered lead sulphide, or galena, is mixed with caoutchouc and sulphur.

No. 585,210.—Pneumatic Attachment for Trousers. Mone R. Isaacs, Philadelphia, Pa.

The crotch portion of a pair of trousers is provided with an inflatable cushion which is divided by a partition into two independent reservoirs, one on each side of the crotch.

TRADE-MARKS.

No. 30,391.—Hydraulic Hose. Eureka Fire Hose Company, New York, N. Y.

Essential feature. The word "Eagle." Used since March, 1886.

No. 30,231.—Hydraulic, Air, and Steam Hose. Boston Woven Hose and Rubber Company, Boston, Mass., New York, N. Y., Chicago, Ill., San Francisco, Cal., and Cleveland, Ohio.

Essential feature. The word "Vim." Used since Feb. 15, 1897.

No. 30,232.—Devices for Introducing Inner Tubes into Pneumatic-Tire Casings. Morgan and Wright, Chicago, Ill.

Essential feature. The words "Tire Mouse." Used since Dec. 29, 1896.

DESIGNS.

No. 27,284.—Comb. Julius Lehmann, New York, N. Y., assignor to the Hanover Gummi-Kamm Company, Actien Gesellschaft, Hanover, Germany.

No. 27,149.—Repairing-Patch for Bicycle-Tires. Ernest Scott, Providence, R. I.

No. 27,221.—Bicycle-Tire. Benjamin V. Gintz, Akron, Ohio.

No. 27,274.—Tire for Bicycles. Watson S. Gray, Philadelphia, Pa.

TRENTON'S FOREMOST RUBBER-MANUFACTURER.

CONSERVATIVE business men familiar with the rubber situation have long predicted the utter extinction of the brilliant and versatile Magowan, of Trenton, together with an equally remarkable but permanently successful career for his formidable rival in business, Mr. Joseph Oliver Stokes. The loss of the valuable plant and business of the Trenton Rubber Co. to the former and its purchase by the latter strikingly emphasize the wisdom of these forecasts. At this juncture, therefore, a sketch of the central figure in the important rubber industry of Trenton may be appropriate.

JOSEPH OLIVER STOKES.

Joseph Oliver Stokes was born in the town of Weissport, Pa., on October 10, 1859. His father, Mr. Joseph Stokes, who is a sturdy Englishman and a leading factor in a great iron-manufactory, planned that this son should have the advantage of a university education, but the young man was bent upon a business career and at the age of eighteen he entered the office of the New Jersey Steel and Iron Co., of which his father was superintendent. He remained there for about a year, when, his attention being drawn to the rubber industry, he incorporated the Standard Rubber Co., with a capital of $10,000, the chief stockholders being his father and himself. At the time of this incorporation gossamer rubber clothing was everywhere in demand and the young concern at once became a considerable factor in its production. Six months later, with added capital and an increased mechanical equipment, the name was changed to the Home Rubber Co. In 1884, or about a year later, the company suffered the serious loss of the entire plant by fire, and a further loss of fully $30,000, above insurance. The factory was at once rebuilt, the manufacture of clothing given up, and a full line of mechanical rubber goods put upon the market. From that time on, the business showed a steady and substantial growth. The plant during the last ten years has been enlarged three times by the addition of buildings, any one of which would accommodate a good-sized rubber factory. To-day the plant and machinery, at a low estimate, stand at about $175,000. The business is a close corporation, the officers being Joseph Stokes, president; W. J. B. Stokes, vice president; Charles E. Stokes, superintendent; and Joseph Oliver Stokes, treasurer and general-manager. The line of manufacture embraces mechanical rubber goods of every description, including pneumatic tires.

A year ago the four owners of the Home Rubber Co. formed a second close corporation under the name of The Joseph Stokes Rubber Co., and acquired by purchase the large rubber-reclaiming plant known as the Assanpink Rubber Co., formerly owned by Murray, Whitehead & Murray. This plant was at once enlarged and improved and now supplies some of the largest companies in the United States with high-grade reclaimed rubber.

The third rubber property in which the subject of this sketch is a leading factor, and which is now engrossing his signal executive ability, is the Trenton Rubber Co., the purchase of which is chronicled in another column. In this Mr. Stokes has departed slightly from his former policy in close corporations composed strictly of his own kin, and secured as an associate in addition to his brother, W. J. B. Stokes, Mr. Edward H. Garcin, a man who as an executive in the sales department has few equals, and who will act as general-manager of the new concern. A further business enterprise which is the fruit of Mr. Stokes's energy is a prosperous commission house in New York known as the World Manufacturing Co. This is owned jointly by his eldest brother and himself.

Personally, Mr. Stokes is one who gives an instant impression of great strength, physical and mental. Once started upon an undertaking, he pushes on with a determination that would verge upon obstinacy were it not tempered by sound sense. This, with a profound sense of commercial honor, together with a minute knowledge of every detail of his business, and an unusual faculty for associating with himself able lieutenants, gives the sufficient reason for his unusual success. The strong organizations which he has created are greatly strengthened by

his plan of family ownership, for the reason that all of the masculine element are not only prominent business men, with executive and manufacturing ability to a marked degree, but outside of the rubber business have large properties and are factors in profitable, growing concerns that were largely of their own individual creation. The senior, for example—Mr. Joseph Stokes—as already chronicled, is at the head of the manufacturing department of Cooper, Hewitt & Co.'s New Jersey Steel and Iron Works. The elder brother, W. J. B. Stokes, is half-owner in the Wilson & Stokes Lumber Co., the Wilson & Stokes Coal and Wood Co., and also treasurer of the City of Trenton. Charles E. Stokes, the younger brother, is the superintendent of the Home Rubber Co., as well as stockholder, and is also a quarter-owner in the Joseph Stokes Rubber Co. Although quite a young man he is an efficient and able manufacturing executive and has in a marked degree the qualities which have made the Stokes name a synonym for means in manufacture.

To return to the subject of this article, a single incident will avail to show the way in which, even as a youth in business, he allowed nothing to deter him from his purpose. When the Home Rubber Co. was very young it fell on a day that the youthful incorporator needed money and that immediately. He therefore made out a note, jumped into an open wagon, drove three miles in the face of a biting wind, with the thermometer below zero, to where his elder brother was superintending a force of men who were cutting ice for his ice company. To reach his brother and receive his signature he had to cross on a narrow plank laid over open water. The plank tilted and he fell in. Pulling himself hastily out he secured the needed signature, drove two miles in his wet clothes to his father's office, got his signature, drove to the bank, deposited the note, and then returned to the factory and rushed work as if nothing unusual had happened. His clothes were frozen so stiff that when he reached the bank he had to be helped out of the wagon, his icy armor holding him so fast that free movement was nearly impossible. As a prominent Trenton bank official remarked then: "He is bound to succeed, for nothing can stop him."

THE CRUDE RUBBER CO.

OUR list of importers of rubber at New York includes this month, for the first time, the name of The Crude Rubber Co., a new concern which has entered the field with the intention of becoming an important factor in the world's trade in rubber. THE INDIA RUBBER WORLD has noted already the incorporation of this company, under the laws of Virginia, under date of February 26 last. The president is George S. Dearborn, a shipping-merchant of New York, who is interested financially. The managing officers are Henry Earle—who entered the rubber business in 1869, later founding the firm of Earle Brothers—vice-president and general manager, and P. deLacy Liebermann—for twenty years a merchant in Brazil, and for the last seven years engaged in the crude-rubber business in New York—treasurer. The company have a capital of $1,000,000, of which $600,000 is preferred stock, fully paid in cash, and $400,000 common stock, issued for good will and service contracts.

The company began active operations on August 9, taking over on that date the business of R. F. Sears & Co., Pará, and Sears & Co., New York, and the business in crude rubber of Flint & Co., with their important connections. The correspondents of the new company on the Amazon will be The Sears Pará Rubber Co., a corporation under the laws of Virginia, of which Richard F. Sears is president. Mr. Sears established a house at Pará in 1881, since which time he has been a very large buyer of rubber. He is at this time at Pará. In this announcement will be found the answer to the question so long asked in the trade: Is Charles R. Flint going into rubber again?

RUBBER-MEN HAVE AN OUTING.

THE third annual outing of the branch managers and salesmen of the Boston Woven Hose and Rubber Co. was held on Saturday, August 28, on Misery Island, about half a mile off Beverly Farms. The entirely party of thirty-two left Boston on the 8.17 train. About twenty left the train at Lynn and the remainder proceeded to Beverly Farms. The party leaving at Lynn rendezvoused at the home of the treasurer and general-manager, Mr. J. Edwin Davis, and from there wheeled over the road to the Farms. Here dories were taken for the Island. Three innings of the great ball game between the "Vims" and the "Bull Dogs" were played before dinner, which was a regular shore dinner, with steamed clams and broiled live lobsters. After dinner the ball game was finished. At the end of the sixth inning, the "Bull Dogs," who were ahead, declared that they had agreed to play only six innings and left the field. Whereupon the umpire gave the game to the "Vims," 9 to 0, and immediately left for the mainland on a special steamer. Fishing and swimming and another meal occupied the time until the departure of the last dories. The party included: J. Edwin Davis, treasurer and general manager; W. A. Darling, Henry Taggard, E. E. Buckleton (London), R. B. Abbott (Chicago), E. B. Davidson (Cleveland), W. F. Kearney (Toronto), J. V. Selby (San Francisco), H. F. Hering (New York), K. J. Fenno, E. H. McCall (Delaware, Ind.), C. E. Weaver, Raymond B. Price, Sam Loevy (St. Louis), W. F. Hamilton, B. F. Clifford (Chicago), R. F. Hayes, J. O. De Wolfe, W. F. Robinson, George Sherman, George Metzgar, W. F. Stearns, H. L. Weaver (Cleveland), A. P. Spear, Edward Grove, Wallace Foster, A. C. Barlow, J. N. Willys, J. T. Monfort (Cincinnati), E. C. Garratt (San Francisco), John Butcher, and G. L. Sullivan.

ON THE ORINOCO.—Several New York capitalists have leased part of the concessions on the Orinoco river, made by the Venezuelan government two years ago to the Orinoco Co., organized by citizens of Minnesota. A great deal of exploring has been done, and it is the idea of the *concessionaires* that much India-rubber will be found. The lessees above mentioned, however, will devote their attention to iron mining.

BALATA TIMBER.—A pamphlet issued by the Orinoco Co. says: "With no other resource, the concession would be worth many millions for the enormous quantities of Balata existing thereon. The wood is very heavy and hard, of a rich copper-brown color, capable of a very fair polish, and very durable indeed. It is well adapted to cabinet purposes, coming between mahogany and black walnut, and is one of the very best hardwoods known. It is largely used for boat and shipbuilding, door-sills, posts, sleepers, etc., and is the very best known material for railroad-ties."

HEARD AND SEEN IN THE TRADE.

ALL the rubber-men whom I have questioned in regard to the Merchants' Association, gotten up lately to encourage out-of-town merchants to visit New York, are members of the organization, and hopeful of good results in general. Without doubt a great many buyers have come to town as a result of the reduced rates of travel obtained by the Merchants' Association, and there has been a good volume of sales in dry goods, notions, and some other lines. But not so much has been expected by the rubber trade, whose goods are staples, unaffected by changes of fashion, and kept in stock in every important town. Hose, belting, and the like are bought only when people need them, and not when a merchant gets a chance to visit a big city at cheap rates. It is different with mackintoshes, however, and Mr. George F. Hodgman tells me that his firm have made sales lately to a goodly number of new customers, which he attributes in part to the work of the Merchants' Association. Some of these buyers had never visited New York before. Mr. E. H. Paine, selling-agent of the United States Rubber Co., said that his customers were the leading jobbers of the country, and that they would hardly be influenced to leave home at any particular time by cheap rates of travel. He believed, though, that the business of the shoe-jobbers in the city had improved on account of the increased number of visitors, and that rubbers had come in for their share of orders. Of course the total volume of the rubber trade is not influenced by the extent of sales in New York; it is only a question whether this city shall have a larger or smaller proportion of the business.

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THE newspaper reports of liberal sales of rubber outfits to gold-prospectors on their way to Klondike cannot be verified here in the east, but Manager Kip, of the Goodyear Rubber Co., says that a good business probably has been done in rubber boots, coats, and blankets on the Pacific coast, where large stocks are kept at all times. There is always a certain demand for such goods in a mining section, which rises with a "rush," such as now exists in the direction of Klondike. It is interesting to hear Mr. Frederick M. Shepard tell of the experience of the old Union India Rubber Co., in the days when the "forty-niners," equipping themselves for the California gold-fields, used to crowd their store down in John street until the doors had to be locked to prevent any more coming in. I remember that when Mr. Pease, the Pacific-coast agent of the United States Rubber Co., was in the east last spring, he wanted to arrange to return a lot of heavy miners' boots, with leather soles, for which the demand seemed to have died out. Recently the company wrote to say that he could return them, only to learn in reply that the last pair had been sold to go to Klondike. Two or three manufacturers have turned their attention to special makes of rubber boots for the Alaskan trade, and Mr. Watkinson, with his accustomed enterprise, was first to appropriate the name "Klondike" as a brand for a new boot.

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THE extra 5-per-cent. discount on rubber boots and shoes will not apply to goods shipped to retailers after September 30. It seems agreed that the activity in the rubber-shoe factories this summer has been due largely to this extra discount. Not only have the factories been active, but the jobbers have booked more orders than during last summer, when the extra discount was not offered. On the other hand, a similar discount was allowed during the summer months of 1895, in which season there was a good demand for rubbers and the factories ran full time. "The extra discount is a good thing for the manufacturers," said Mr. William Morse, of the New York jobbing trade, "for it divides the demand for goods throughout the year and enables the factories to be run through the dull months of summer. Otherwise the retailers, who really don't want the goods until November, would delay ordering until the first snow-storm, when it might be impossible for all the orders to be filled. But there is one objection to the present system, from the standpoint of the jobber. The retailer who places his order in the summer is not asked to pay until January. A man may appear to be perfectly solvent in June and yet fail before the end of six months. Besides this element of risk, there is the uncertainty in regard to the weather to face. The extra 5-per-cent. discount offers a temptation to retailers to buy liberally, and if they should buy beyond their means, or if the winter should be dry, the jobber has to 'carry' his customers. In effect, the retailer in many cases is gambling on the jobber's money." But Mr. Morse has not permitted these views to keep him out of an active competition for orders, and I notice that lately he has made four or five additions to his office force.

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NOT only is the continued high price of raw rubber to be faced by the mackintosh people, but other materials used by them are advancing. Woolens are going up, under the influence of the increased duties in the Dingley tariff, and cotton materials promise to be higher as a result of what is to the cotton-manufacturers an improvement in business. When many spindles are idle, prices are apt to fall, whereas the general employment of spindles or looms enables the factory people to mark up their products. The effect of the tariff on woolens, by the way, is not due to any use of imported fabrics in the mackintosh trade. "When we began business," said one leader in the trade, "we were obliged to import most of the cloth used for waterproof garments, but our home manufacturers have been so successful in weaving such goods that they can now discount the product of foreign looms. We do not use a yard of imported cloth now." In two houses visited in one morning I was told that orders from the trade were being received in satisfactory volume, and that a gradual improvement in business was looked for as a result of the bountiful harvests in the west and the high prices realized for the crops, all of which would have the effect of putting a great deal of money into circulation. In the third house visited, however, the demand for mackintoshes was said to be not even so good as at this season last year.

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A MAN in the reclaimed-rubber trade whom I met lately said that his firm were handling old bicycle-tires mostly, for the reason that they found the best rubber in this class of scrap. "How about uniformity in the matter of quality?" I asked. "We have had no trouble on that score," he said. "Some of our customers, on learning that we use tire stock extensively, have asked whether the quality of our product would not be uncertain in consequence. But our experience with tires has been entirely satisfactory. We have learned how to grade tires, and on receiving a shipment we cull carefully, returning whatever is not up to standard. Now and then we come across tires in which cheap African gums or shoddy has been used, and these we throw out, but for the most part manufacturers are using Pará rubber, with a little Madagascar and other like

sorts. We expect to see the standard of rubber used in tires kept up, for the reason that neither rubber-men nor tire-concerns can afford to sell tires that fail to show service. Even the buyer of a bicycle for $20 expects a tire that will hold air, and if he doesn't get it the business of the manufacturer suffers. A short time ago a certain concern that had turned out some very cheap tires brought them to us for scrap—they couldn't find a market for them anywhere in the bicycle trade."

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IT is hardly probable that, under the management of such capable rubber-manufacturers as have just come into control of the Trenton Rubber Co., the record of that concern as a money-maker will stop. The new proprietors take over a good plant and a going business, leaving the receiver and the stockholders in the company which failed to make the best possible settlement with the creditors of that concern. I am told that the assets in sight, after satisfying the preference creditors, will yield a dividend of at least 25 per cent. on the remaining claims. If the receiver should win his suits brought in the interest of the creditors it is possible, in the opinion of some who have looked over the field, that 50 per cent., or even 60 per cent., may be distributed. No one has been seen, however, who is willing to be quoted as holding out this hope to the creditors.

THE MAN ABOUT TOWN.

SALE OF THE TRENTON RUBBER CO.

THE sale of the property of the Trenton Rubber Co. at public auction took place as advertised, on the afternoon of August 31. The property was offered by John T. Bird, as receiver for the company, under the order of the court of chancery. The conditions were that the property should be offered first in three separate lots, and then together in bulk, the sale to be binding which should bring the largest sum. The first lot—land, factory and office buildings, and machinery plant—was knocked down to Philip M. Brett, a lawyer at No. 120 Broadway, New York, at $65,000. The second lot—a narrrow strip of land the title of which is in dispute, with sheds, etc.—went to the same bidder for $725. The third lot—manufactured and unmanufactured stock—was sold to various bidders, including E. H. Garcin and G. R. Cook, for a total of $14,386.75. The aggregate was thus $81,111.75.

The auctioneer then offered the entire property in bulk, when Francis C. Lowthrop made a bid of $81,200, at which price the bidding closed and the sale was announced to have been made to Mr. Lowthrop. This gentleman is a Trenton lawyer, representing a syndicate, the other members of which are J. Oliver Stokes, W. J. B. Stokes, and Edward H. Garcin. The sale was confirmed by Vice-Chancellor Reid on September 3.

This sale, by the way, had been advertised more than once previously. It was advertised for August 10, with the stipulation that the receiver would, in advance of that time, receive private bids. On the date mentioned Receiver Bird appeared in court and reported that two bids had been received. He wished to ask whether one of the bids should be accepted, or the sale should go on. Lawyer Woodbury D. Holt, claiming to represent about half the creditors, opposed any sale, proposing instead a plan by which the creditors should take the concern out of the receiver's hands and operate it, thereby eventually securing their claims. This was opposed by counsel for other creditors, on the ground that its object was to put the concern again under the management of Frank A. Magowan. Vice-Chancellor Grey declined to confirm either of the private bids, and said he would leave it to the receiver whether the public sale should take place then or at a later date. The receiver then adjourned the sale for three weeks, when it took place as stated above.

The purchasers of the Trenton Rubber Co. are prominently identified already with the rubber industry. J. Oliver Stokes is secretary and treasurer of the Home Rubber Co., and president of the World Manufacturing Co. William J. B. Stokes is vice-president of both the companies named, president of the Wilson & Stokes Lumber Co., and treasurer of Trenton. Both the Messrs. Stokes are members also of the Joseph Stokes Rubber Co. E. H. Garcin, during most of the time for thirteen years past, has been connected with the Trenton Rubber Co. After having had charge of the company's sales for six years, he became in December, 1895, treasurer and general-manager, which offices he has since held. At one time he was president of the Southern Rubber Co. (Richmond, Va.), and he is now vice-president of the Richmond Leather Manufacturing Co., besides being president of the American Supply Manufacturing Co. (New York.)

The Trenton Rubber Co. was incorporated in 1881, succeeding the Trenton Rubber Works, established in 1879 or 1880 by Magowan, Alpaugh & Magowan. Its plant occupies about four acres of land, advantageously located on the line of the Pennsylvania railroad, and is in excellent condition. It is at least as large in capacity as any other rubber factory in Trenton, and has had a paying business from the start, showing a profit even during the periods when it has been in the hands of receivers. It is stated that the net profits in one year amounted to 47 per cent. on the capital stock. The production has been in mechanical goods, and especially in medium-priced belting and in packing. About seven years ago the company began an export trade which has grown to excellent proportions. Under the new management the works will be operated actively from the beginning. It is too early yet to announce details of the organization of the new company, but it is understood that Mr. Garcin will continue in the position of general-manager. His ability as a salesman is of the highest order.

RUBBER PLANTATIONS IN SUMATRA.

NUMEROUS India-rubber-trees are growing on the east coast of Sumatra in a wild state, and the natives have collected large quantities of rubber, to the great damage of the rubber-trees, which have become debilitated and in some cases extinct. Within the past few years wealthy Holland companies have created rubber plantations and in the Kassan district a not unimportant market in Sumatra rubber may be expected in the near future. An idea may be had of the remunerativeness of such plantations when it is guaranteed by the directors of the companies that 100,000 rubber trees will clear annually, above all expenses, from 500,000 to 600,000 marks. The editor of the *Gummi-Zeitung*, in which we find this note, expresses very grave doubts of such figures being realized.

NEW RATE ON WIRE.—Under the new Canadian tariff insulated wires for electrical purposes are dutiable at 30 per cent. against 25 per cent. under the old schedule.

A DECLINING BUSINESS IN BALATA.

THERE has been little activity of late in the Balata trade. The falling-off in production has been attributed, in reports from European sources, to unfavorable weather in the Balata country. It appears more probable, however, that the cause is a less temporary one, and that the industry is becoming reduced to very narrow limits. At no time has the demand for Balata borne out the predictions made for its future when, in 1857, it was first discovered to have uses as a substitute for Gutta-percha. Even Gutta percha is in slight demand outside of the electrical industry, and there is consequently not much use for a substitute, besides which Balata has failed to find a place independently on its merits. It seems to serve no particular purpose to a better degree than any other gum, and it has even not the merit of cheapness. On the contrary, its cost of production up to date has remained so high as practically to prohibit its consumption in most quarters.

The American Exploitation Co. were organized a few years ago by Joseph P. Earle and others engaged in the rubber trade, with the idea of developing the trade in Balata on a large scale, and the business was organized with headquarters at Paramaribo, Dutch Guiana. For some time their output amounted to more than half of the total production, but the failure of Balata to find an increased consumption, together with the downward tendency of prices, led the company to lessen their operations, and at the beginning of the present year they were merged into the Dutch-American Trading Co., composed practically of the same persons. Now it is understood that the last-named company are going into liquidation. Their operations in Balata-gathering are confined now to collecting supplies from traders in the interior of Dutch Guiana to whom advances of goods or money have been made.

Recent trade returns from Paramaribo state that the arrivals at that port of Balata during May amounted to only 2468 kilograms (= 5430 pounds), and the arrivals for June to only about 3000 kilograms. Heretofore during these months, which are the first of the crop year, the receipts have been five times as much, or more. The highest output from Dutch Guiana in any year was in 1895, when 294,098 pounds were exported. As this represented considerably more than half the total production in the world, it will be seen that the retirement from the field of the American Exploitation Co. will mean a marked curtailment of the industry.

It has been stated that sheet Balata cannot be laid down at Paramaribo for less than 48 cents a pound. Unless, therefore, it can be sold in New York for at least 50 cents, the business would represent a loss, and this is a higher figure than has been quoted for some time past. Sheet Balata is the most desirable form of this gum, and its production has been confined mainly to Dutch Guiana. That which come from British Guiana is known as block Balata. It is claimed that the extensive forests of Balata on the Orinoco, in Venezuela, will yield only the block Balata, in which case there appears to be little probability of their being tapped to an important extent under the present conditions of manufacturing. It is understood that the present total stocks of sheet Balata do not exceed 40 tons.

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PROBABLY less Gutta-percha is used in the United States now than for a long time past. Its use was begun here about as soon as in Europe, except in the line of submarine-cable manufacture, which never has become established in America to an important extent. But in the manufacture of various specialties for which Gutta-percha is still used in Europe, and especially in Germany, the Americans soon found a desirable substitute in hard rubber (which, by the way, is an American invention) and in other materials, most of which are cheaper than Gutta-percha, while equally serviceable. A member of the trade interviewed on the subject for THE INDIA RUBBER WORLD said that he could not account for the continued popularity of Gutta-percha in Europe for the manufacture of certain small wares except for the reason that most European peoples are of such a conservative nature that, having once found Gutta-percha articles serviceable, they continued their use through habit, without taking the trouble to experiment with the equally good, though cheaper, hard-rubber wares, which came into existence at a later period.

AFFAIRS OF FRANK A. MAGOWAN.

ON August 27 Receiver Bird began proceedings in the court of chancery against Allan Magowan and William P. Hayes, two of the directors of the Trenton Rubber Co., and Mrs. Sarah J. Magowan, wife of Allan Magowan, seeking to have them decreed liable for $270,432, which Frank A. Magowan is alleged to have overdrawn on his accounts with the company. Hayes and Allan Magowan are charged with negligence and carelessness as directors, and Mrs. Magowan is made a defendant because her husband transferred all his property to her two years ago, without, it is alleged, any consideration. This is in addition to a suit for the same amount previously brought by Receiver Bird against Frank A. Magowan.

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IN the New Jersey supreme court Charles B. Case, receiver of the Eastern Rubber Manufacturing Co., on August 11, began an action upon contract against Frank A. Magowan, for $89,948.16, with interest from December 30, last. The bill of particulars charges that on January 10, 1893, Mr. Magowan subscribed for $120,000 of the capital stock of the company. From that time until December 30, 1896, Mr. Magowan is charged by the company with cash amounting, with the subscription, to $180,541.10. He is credited, during the same period, with $90,592.94, leaving a balance due the company of $89,948.16.

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THE mansion of Frank A. Magowan, at Trenton, was sold by the sheriff on August 25, to satisfy judgments for $7500 recovered by artisans who furnished the house; a mortgage held by a Trenton bank for $15,000, and unpaid interest and costs of $2000. The sale was made subject to the mortgage and the dower rights of Mrs. Frank A. Magowan. Woodbury D. Holt, counsel for Magowan, bid the property in for $7450. Immediately it was put up again to realize the bank's claim, and Captain Holt bid it in for $18,500. The last sale wiped out the dower rights of Mrs. Magowan. The total realized by the sales was $25,950. The property is considered worth $100,000, and it is said to have been purchased by a syndicate of which General William H. Skirm is a member, who will negotiate a new mortgage on the house, now that the title has been cleared. This sale is said to terminate all of Mr. Magowan's property interests.

PACIFIC CABLE.—The British and Colonial governments have decided to postpone the Pacific-cable scheme indefinitely. The building of such a cable would influence the Gutta-percha markets to a very large extent. Its postponement is doubtless due, in great part, to the influence of the companies now monopolizing cable communication with the leading ports beyond the Pacific. The late Sir John Pender, who was at the head of these companies, strongly opposed a new cable.

TRADING IN RUBBER STOCKS FOR AUGUST.

IN the table below is shown the extent and nature of the transactions in Rubber stocks on the New York Stock Exchange by weekly periods during August; also, for the same month in each preceding year since the incorporation of the United States Rubber Co.:

LISTED ON THE NEW YORK STOCK EXCHANGE.
201,660 shares Common=$20,166,000.
194,005 shares Preferred=$19,400,500.

DATES.	COMMON.			PREFERRED.		
	Sales.	High.	Low.	Sales.	High.	Low.
August 2-7, 1897...	6,600	16½	14½	2,995	61⅜	58¼
August 9-14.....	6,527	18¾	16⅛	4,125	65	61½
August 16-21.....	8,412	20⅜	15⅝	4,176	71	65
August 23-28.....	2,590	19	16¾	1,033	68¼	67¾
August 30-31.....	1,762	19⅛	18¼	900	68½	68
Total, August, 1897.	25,891	20⅜	14½	14,129	71	58⅛
Total, August, 1896.	5,325	16	14½	1,470	71⅛	65
Total, August, 1895.	13,038	41¾	39⅝	2,440	94⅝	93⅞
Total, August, 1894	3,548	42¾	32⅞	1,314	96¼	89½
Total, August, 1893.	3,525	30	17	2,256	70	50

Since the end of August prices have been maintained, and transactions have been in good volume. There were sales on September 3 alone of 5009 shares of Common, at 19 to 20¼, and 1695 shares of Preferred, at 69 to 70⅜.

O'BRIEN'S FOOTHOLDS IN EUROPE.

THE O'Brien patent foothold, a novelty in rubber footwear which has been mentioned in THE INDIA RUBBER WORLD, seems to have met a most favorable reception in Europe. The sole licenses of the footholds for the United Kingdom—O'Brien's Patents, Limited—are having them made by two English rubber-manufacturers, at the rate of 1000 pairs per week. The Russian-American Rubber Co. (St. Petersburg) are manufacturing the footholds under a license granted by Mr. O'Brien to Messtorff, Behn & Co. (Hamburg), who are representatives outside of Russia of the St. Petersburg concern. Hutchinson & Co. (Paris) are also making footholds at the rate of 1000 pairs a week and turning out a fine shoe. Some representatives of American manufacturers who have seen the Hutchinson product have expressed surprise that such perfect work should be turned out in Europe. The Austro-American Rubber Co. (Vienna) have obtained a license for manufacturing the footholds in Austria-Hungary. It is understood that Mr. John F. O.Brien, the inventor of this article, is negotiating for the manufacture of considerable quantities in the United States.

WATKINSON'S NEW PRICE-LIST.

THE manufacturers of the "Thistle Brand" of rubber boots and shoes—George Watkinson & Co., of Philadelphia—have issued a revised list of net prices, under date of September 1, 1897. These prices are somewhat higher than those issued last spring, the advance practically corresponding, in point of time, to the withdrawal of the extra 5-per-cent. discount allowed during the summer months by the other companies. Some of the differences between the new and old lists are here indicated: Men's gum hip boots, $3.75 new, $3.50 old; men's gum short heavy boots, $2.50 new, $2.35 old; men's heavy buckle arctics, $1.20 new, $1.10 old; men's heavy overshoes, 72 cents new, 65 cents old; women's heavy overshoes, 40 cents new, 37 cents old. Some time before the appearance of the new list, Messrs. Watkinson & Co. advised us: "We have all the orders we can fill for several months, and will lay off our salesmen from June 26 to September 1, and as we do not expect to offer any goods at any price in the *interim*, we have not yet decided on what advanced prices we will settle upon."

From the character of the changes in the new list it may be inferred that the firm have found no indication of a decreased demand for their goods.

INDIA-RUBBER MISCELLANY.

IN a recent magazine article on how the streets of New York are cleaned, Colonel George E. Waring, Jr., the street-cleaning commissioner, quotes the president of the United States Rubber Co. as saying that the improvement in the condition of the streets has meant a loss to the company in profits of $100,000 a year. City people in New York don't buy rubbers as formerly, according to this. At the same rate, the profits of the rubber company would disappear altogether if the same standard of street-cleaning were adopted in all our cities. That is, unless a trade can be built up with the farmers large enough to keep the manufacturers of rubbers busy.

WILD ESTIMATE.—Owing to the increased demand for India-rubber for cycle-tires, the *Chemist and Druggist* (London) hears it estimated that "last year alone over 100,000,000 trees were destroyed." While our contemporary was guessing it might as easily have made the figures a thousand millions. Or, with such an imagination, why doesn't it tell us that rainbows have come to be used as a substitute for rubber in making tires? The truth is that Pará rubber-trees are valued as truly as the orange-trees of Florida or the olive-trees of Sicily.

HAWAII.—The demand for rubber goods here, supplied mainly by the United States, is very variable. Our exports of such goods to Hawaii rose in value from $2810 in 1876 to $18,204 in the next year. There was then a heavy decline, with fluctuations until 1891, when the record figure was reached—$29,424. The exports in 1896 reached only $23,780.

THE TIRE THAT IS NEEDED.—An editorial on bicycles in the New York *Sun* says: "The wheel's most vulnerable point, its tire, is being studied and experimented with, with ardent desire for its improvement and with no little hope. It must be possible to put into the rubber some element that would lessen its slipping on wet pavements; and it seems absurd that wheels destined to pass over jagged roads should be left so puncturable. A less puncturable tire and a tire which when inflated will remain full indefinitely, is greatly needed."

TIRES IN JAPAN.—A recent letter from Japan on the bicycles manufactured in that country compares the model with that common in the United States about 1893. The wheels are very heavy, and are listed at different prices, according as they are equipped with pneumatic, cushion, or solid rubber tires. The writer, who is an American, does not consider the time ripe for a profitable export of our wheels to Japan.

ELECTRIC CABS WANTED IN SWEDEN.

Please tell us if the Pope Manufacturing Co. are the patentees and manufacturers of the electric cabs described in THE INDIA RUBBER WORLD of June 10. To whom should we write for an agency?

K——— & CO.

Stockholm, Sweden, August 2, 1897.

Write to the Pope Manufacturing Co., Hartford, Conn., the sole manufacturers.

TRADE AND PERSONAL NOTES.

W. D. ALLEN & CO. (Chicago) have filed a bill against Claude J. Roberts, who carried on a rubber-clothing business in the same city under the style of Roberts Brothers, at Nos. 254–256 Franklin street, and who made an assignment on July 2, charging him with conspiracy to defraud his creditors. It was understood, the bill declares, that Roberts was to procure on credit goods in as large quantities as he could, the same to be transferred to certain other parties in payment of alleged claims which they held against him. The total amount of goods thus procured since January 1, it is claimed, was about $100,000, the greater part of which is alleged to have been transferred, including cash obtained from the sale of goods, to parties named in the complainant's bill, thereby unlawfully making them preferred creditors. An accounting is asked for. W. D. Allen & Co. are creditors only to the amount of $245.

=The annual meeting of the Rubber Tire Association was held at the Arena restaurant, in New York, on September 8, at too late an hour for a report of the proceedings in this journal.

=The Fairfield Rubber Co. (Fairfield, Conn.) expect to exhibit samples of some desirable novelties in carriage cloth at the twenty-fifth annual convention of the Carriage Builders' National Association, in New York, in October.

=The Rubber Tire Wheel Co. (Springfield, Ohio) have opened a branch house at Des Moines, Iowa.

=The Taylor & Spotswood Co., dealers in carriage-makers' supplies in San Francisco, Cal., report that they are highly pleased with their rubber-tire trade.

=Col. Theodore A. Dodge, who had been in Europe since July, was due to reach New York on September 7, arriving in time for the regular meeting of the Rubber Tire Association, of which he is president.

=The partnership formerly existing between Benjamin S. Codman, Asahel M. Shurtleff, and Franklin O. Whitney, in Boston, has been dissolved by the death of Dr. Codman and the retirement of Mr. Whitney. All liabilities have been assumed by Mr. Shurtleff, who will continue the rubber-sundries business under the old style—Codman & Shurtleff.

=The Goodyear Vulcanite Co. (New York) will not, as reported, remove their factory from Morrisville, Pa., to escape the payment of the state tax of 3 cents per day for each alien employed. This law, by the way, is not to be enforced, having been declared unconstitutional. Manager Dittenhoeffer says that if their factory is removed at any time it will be to bring it within a more convenient distance of New York.

=Mr. J. Herbert Stedman (No. 89 State street, Boston) has taken the reclaimed rubber of the Joseph Stokes Rubber Co. to market in and about Boston.

=Mr. S. H. C. Miner, president of the Granby Rubber Co. (Granby, Que.), was a recent visitor to Boston.

=Mr. Robert W. Baird, of George A. Alden & Co. (Boston), quite frequently visits New York to look after certain of his former customers, instead of confining himself to New England, where he has been for some months past.

=The Hood Rubber Co. (Boston) are adding new buildings to their plant, being forced to do so by the demand for their goods.

=Mr. E. S. Converse is one of the prominent exhibitors at the annual plant and flower show of the Massachusetts Horticultural Society, at Boston.

=William Lincoln Sage has taken apartments at the St. Cloud Hotel, New York, and after October 1 will make his headquarters there in his successful pushing of the goods of George Watkinson & Co. (Philadelphia).

=Mr. Ernest W. Bailey, a younger brother of C. J. Bailey (Boston), has secured a place in the office of the Cable Rubber Co.

=Charles F. Baker & Co. have purchased the plant and good will of the Boston Rubber Cement Co.

=Harrison C. Frost & Co. moved September 1 from the Shoe and Leather Exchange building, and have taken the whole building at No. 591 Atlantic avenue (Boston), where they carry a complete line of the mechanical and other rubber goods which they market.

=The New York fire-department advertises for proposals for 500 feet of 2½-inch cotton rubber-lined fire-hose, "Bay State Jacket" brand; 500 feet of 2½-inch carbolized rubber fire-hose, "World Fire-Hose" brand; and 500 feet of 2½ rubber fire-hose, "No. A-1 Rubber Fire-Hose" brand, to be opened at 10.30 A. M., September 15.

=The India-Rubber Comb Co. have received lately an order for combs, which is said to have been the largest for fifteen years.

=J. P. Cooke, a rubber-stamp mannfacturer at No. 125 Dearborn street, Chicago, and interested in rubber-stamp concerns at Omaha, Neb., and elsewhere, committed suicide at Chicago on August 26.

=It was charged recently in the Cincinnati newspapers that grave irregularities existed in the office of the city purchasing-agent. The basis of the charge was the purchase of pump-valves from the Boston Belting Co. at prices higher than those of a local concern. The superintendent of the water-works department reported that he had refused to accept the lower-priced goods on the ground that the valves of the Boston Rubber Co. had been tried for years and found safe, and that he did not have the opportunity at the time to make experiments when the water supply of the city was involved.

=F. D. Balderston, in charge of the tennis-goods department of the United States Rubber Co., expects to have samples for 1898 goods ready by September 15.

=One of the large Chicago stores has ordered six horseless delivery-wagons, equipped with pneumatic tires.

=Mr. A. B. George, a wholesale dealer in rubber goods at Des Moines, Iowa, reports a larger trade in August than during July, August, and September last year. He thinks this due in part to the lower prices of rubber footwear.

=George Watkinson & Co. (Philadelphia) have filed plans in the city building-department for an addition to their rubber-shoe factory, to be of brick, three stories high, and 60×70 feet.

=The Diamond Rubber Co. (Akron, Ohio) have filed an answer to the petition of E. L. Toy, their late manager and treasurer, who sued for alleged unpaid balance of salary, denying that they owe him anything, or that any demand was made by him for the sum in question before the filing of the suit.

=The Kokomo Rubber Co. (Kokomo, Ind.) are reported to have closed a large contract for next season's goods, with a St. Louis firm. Fifty thousand pairs of tires are mentioned as the size of the order.

=Mr. R. F. Sears has returned to Pará, sailing from New York on the *Grangense* on August 25th.

=J. E. Bancroft, who was connected with the rubber factory of Arlington U. Betts & Co. (Toledo, Ohio) before the sale of that concern to Rochester parties, failing to make a satisfactory contract with the latter, announces his intention of reopening the Toledo factory and manufacturing a line of specialties similar to those made by Betts & Co. Under the style of J. E. Bancroft & Co. he has started salesmen on the road and promises to get out a catalogue shortly.

=Russell & Co., of Holyoke, Mass., which is an important manufacturing center, have arranged to represent the National India Rubber Co. (Bristol, R. I.) in their mechanical-goods line.

=The Seamless Rubber Co. (New Haven, Conn.), for the third time, have received the contract for supplying rubber bands to the postoffice department for one year. They have also, this year, contracts for rubber bands for the army and navy departments.

=The plant of the Danversport Rubber Co. (Danversport, Mass.) was destroyed by fire on the morning of August 6. Their business was the reclaiming of rubber by a chemical process, and as it was carried on in a wooden building the flames speedily reduced everything to ashes, despite the firemen. The stock included two large lots of reclaimed rubber ready for shipment to shoe companies. The loss has been estimated as high as $40,000. Only the buildings were insured.

=Mr. A. T. Dunbar, who has been for several years past connected with the rubber trade on the Pacific coast, is now associated with Mr. C. H. Chase in the management of the San Francisco branch of the New York Belting and Packing Co., Limited, at No. 509 Market street. Mr. A. H. Emery, known in every mining-camp in the coast states, has also joined the forces of this house and on the road will make trade lively.

=Treasurer Lewis D. Parker, of the Hartford Rubber Works Co., returned lately from Europe, where he looked into the matter of pushing the Hartford single-tube tire. He reports satisfactory progress in the development of their foreign trade.

=Mr. Duncan Bond, a young man who is well and favorably known with Denver business men, is the lucky person who secured the appointment as selling-agent in the Denver section for the Manhattan Rubber Manufacturing Co. (New York). Show-rooms have been established at No. 1651 Lawrence street, Denver, where a complete line of samples covering this company's products will be displayed.

=Mr. Harry P. Ballard, cashier of the Boston Rubber Shoe Co., and a member since 1873 of the Massachusetts state militia, has been elected a major in the Fifth regiment of infantry. He was for three years colonel of Company L (Malden) and, since 1888, has been regimental adjutant in the Fifth.

=The situation at Hudson, Mass., where the strike at the Apsley Rubber Works has not yet been declared off, has remained quiet since the evening of August 3, when a stick of dynamite was exploded under a boarding-house occupied by workpeople who have taken the places of strikers. No person was harmed, the damage to property was trifling, and no arrests have been made. The strikers emphatically disclaim all responsibility for the bomb.

=The Hood Rubber Co. (Boston) have taken additional office room in the Shoe and Leather Exchange building in Boston. Their factory in East Watertown is running up to its fullest capacity.

=The Easthampton Rubber Thread Co. (Easthampton, Mass.) have paid $4000 recently to the trustees of Williston Seminary, as water damage, in a case growing out of the damming up of a brook which overflowed the adjacent property.

=Mr. E. H. Cutler has returned from Europe and is again to be found at his office at No. 116 Bedford street, Boston.

=Mr. Joseph V. Selby, Pacific-coast manager of the Boston Woven Hose and Rubber Co., and Mr. E. C. Garrett, Northwestern representative of the same company, were recent visitors to Boston to attend the annual meeting, and were able to present most gratifying reports of business progress.

=A new factory for the manufacture of rubber soles for tennis shoes has been lately completed at Clairmont, N. H. The machinery in use is that formerly owned by H. H. Francis, of Hartford, Conn., and consists of a washer, two mixers, a calender, engine, etc. The business is run by the former superintendent of the Mundell Rubber Co. (Trenton, N. J.)

=The Peoria Rubber and Manufacturing Co. (Peoria, Ill.) have ordered additional machinery which will increase their capacity to 1000 bicycle-tires per day. Their orders now in hand, it is reported, will keep them busy until New Year's.

=The United States Rubber Reclaiming Co. (Derby, Conn.) have leased the building formerly used as a branch foundry by the Birmingham Iron Foundry Co., at Shelton, as a storehouse for waste-rubber stock.

=The display made by the Canadian Rubber Co. (Montreal, Que.) receives very prominent mention in newspaper reports of the Provincial Jubilee Exhibition, at Montreal, which was opened formally on August 19.

=The Millay Last Co., it is reported, have been making changes in the distribution of their plant at Hudson and Haverhill, Mass., with a view to devoting the factory at the former place especially to production of lasts for rubber footwear.

=Mr. E. E. Buckleton, European agent of the Boston Woven Hose and Rubber Co., with headquarters in London, is now in the United States to attend the annual meeting of the company and to prepare for a further capture of the foreign markets by the "Vim" tires.

=The managers of the various branches of the Hartford Rubber Works Co. (Hartford, Conn.) and their forces of traveling men have been at the factory lately in consultation with the company's officials in regard to the 1898 trade. On August 23 the company gave a banquet to the visitors, at which a solid silver loving-cup was presented to Mr. Lewis D. Parker, who presided.

=The Overman Wheel Co. (Chicopee Falls, Mass.) will make single-tube tires for the trade for 1898. They have made their own tires in the past, but none for the general trade.

=Mr. W. B. Powell, of the Monarch Rubber Co. (St. Louis), was agreeably surprised, on the evening of August 23—his fortieth birthday—on going home to dinner, to find seated at the table all the officials of the company, who had arranged with Mrs. Powell for a celebration of the event.

=Messrs. John R. Farrell & Co. (Boston) are offering their rubber clothing factory at Hyde Park, Mass., for sale at a price that ought to be immediately effective.

=In respect to the financial situation, Albert B. Beers, broker in India-rubber and commercial paper (No. 58 William street, New York), advises us as follows:

"During August there has been a fair demand for paper from both city and out-of-town banks, and during the early part of the month rates ruled easy, about the same as in June and July, but towards the end of the month, with the increasing demand from the west and south for money, and also on account of the generally-improved business conditions, rates became firmer, and are now ruling at about 4½ @ 5 per cent. for the best single and double names and 5½ @ 6 per cent. for those not so well known; at the present writing these conditions appear likely to continue."

REVIEW OF THE INDIA-RUBBER MARKET.

AGAIN we have to report a continued upward tendency of prices, shared by practically every grade of rubber handled in this market. Not only has the tendency been upward throughout the month under review, but prices are materially higher to day than at the date of our last report. Otherwise there is little to report in the situation that differs from what was said in these columns a month ago. Buying by manufacturers was pretty active during most of the month, though the demand is now somewhat easier. Prices are none the less firm, however, owing to the continued activity of the mills here and abroad. The footwear manufacturers have been and are particularly active, and promise to continue so. The only reason given for the lighter demand for the moment is that the deliveries have been a trifle in advance of the consumption, but not sufficiently so to be long felt as a factor in the market, since manufacturers naturally object to paying present prices for larger amounts than they are obliged to have.

It will be noted, from our statistical summaries, that stocks of Pará rubber in England have been materially decreased, being less than half as great as we reported one month ago, and less by 30 per cent. than at this time in 1896. By the way, the arrivals here of Pará grades from Europe were exceptionally large during the month of August. Our latest quotations from Pará are lower than in August, but this is due to the advance in exchange.

The latest quotations in the New York market are:

PARÁ.		
Islands, fine, new	85	@86½
Islands, fine, old	88	@89
Islands, coarse, new	46	@49½
Islands, coarse, old	none here	
Upriver, fine, new	87	@88½
Upriver, fine, old	89	@91
Upriver, coarse, new	59	@60
Upriver, coarse, old	61	@62
Caucho (Peruvian) sheet		@46
Caucho (Peruvian) strip		@47
Caucho (Peruvian) ball	52	@54

CENTRALS.		
Esmeralda, sausage	53	@54½
Guayaquil, strip	48	@49
Nicaragua, scrap	52½	@54
Mangabeira, sheet	42½	@44

AFRICAN.		
Tongues	44	@45½
Sierra Leone	25	@55
Benguela	50	@51
Congo Ball	44	@46
Cameroon Ball	45½	@46
Flake and Lumps	28	@29
Accra Flake	20	@20½
Accra Buttons	54	@57
Accra Strips	60	@61
Lagos Buttons	50	@52
Lagos Strips	50	@54
Liberian Flake		@30
Madagascar, pinky	none here	
Madagascar, black	none here	

EAST INDIAN.		
Assam	40	@63
Borneo	27	@42

GUTTA-PERCHA.	
Fine grade	1.35
Medium	1.20
Hard white	90
Lower sorts	50
Balata	

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	8 $300	Upriver, fine	9 $200
Islands, coarse	4 $000	Upriver, coarse	5 $600

Exchange 8*d*.

The statistical position of Pará rubber in New York and elsewhere is as follows, the figures expressing tons of 1000 kilograms:

	Fine and Medium.	Coarse.	Totals.	Totals. 1896.	Totals. 1895.
Stock, July 31	264	48 =	312	247	311
Arrivals, August	444	195 =	639	202	280
Aggregating	708	243 =	951	449	591
Deliveries, August	513	222 =	735	173	357
Stock, August 31	195	21 =	216	276	234

	1897.	1896.	1895.
Stock in England, August 31	630	995	990
Deliveries in England, August	675	550	575
Pará receipts, August	1140	1130	980
Stocks in Pará, August 31	340	170	110
World's supply, Aug. 31 (excluding Caucho)	1697	2205	2108
Pará receipts since July 1	2110	2040	1940

NEW YORK PRICES FOR PARÁ RUBBER IN AUGUST.

	1897.	1896.	1895.
Upriver fine	86½@88	82 @86	72 @74
Upriver coarse	57 @60	54 @57	56 @58
Island fine	84 @86½	77 @81	70 @73
Island coarse	49 @50	41½@44	45½@48
Cameta coarse	56 @58	51 @52	50 @51½

THE ANTWERP RUBBER MARKET.

DURING July and the present month prices have ruled firm. In most instances, in the public sales, brokers' estimations were exceeded by 1 to 3 per cent. Sales in July amounted to 168 tons. The arrivals in July amounted to 121 tons, against 62 tons in the same month of 1896. The arrivals in August amounted to 184 tons, against 115 tons in August last year.

To-day's auction sales showed an advance of 2 to 4 per cent. for black Kassai and of 6 per cent. for a lot of 16 tons Upper Congo Lopori balls. The latter, estimated at 6.70 francs, sold at 7.10 francs, probably for England.

The figures in the following statistical table represent weights in kilograms:

	1897.	1896.	1895.	1894.	1893.
Stocks, June 30	168,178	50,995	100,903	36,597	7,315
Arrivals, July	121,395	62,623	25,987	21,963	1,795
Total	289,573	113,618	126,890	58,560	9,110
Sales, July	167,641	45,438	35,384	10,049	—
Stocks, July 31	121,932	68,180	91,506	48,511	9,110
Arrivals since Jan. 1	870,637	424,539	239,687	94,080	51,855
Sales since Jan. 1	887,973	407,354	230,853	53,758	46,623

C. SCHMID & CO.

Antwerp, August 24, 1897.

IMPORTS FROM PARA.

THE receipts of India-rubber direct from Pará and Manáos at the port of New York since our last publication are reported in detail below, the figures referring to pounds:

August 16.—By the steamer *Grangense*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Boston Rubber Shoe Co.	40,000	7,500	15,700	13,400=	76,600
Reimers & Meyer	44,500	10,000	18,600	=	73,100
Crude Rubber Co.	31,100	1,400	13,700	2,200=	48,400
New York Commercial Co.	22,500	5,700	14,900	1,100=	44,200
Flint & Co	21,500	3,000	7,400	=	31,900
Shipton Green	6,300	300	700	500=	7,800
Lawrence Johnson & Co.	2,900	300	3,000	=	6,200
Kunhardt & Co.	3,200	2,900	200	=	6,300
George G. Cowl	3,200		200	=	3,400
Joseph Banigan			2,300	=	2,300
Total	175,200	31,100	76,700	17,200=	300,200

August 27.—By the steamer *Hilary*, from Pará:

New York Commercial Co	85,000	11,800	41,200	1,200=	139,200
Boston Rubber Shoe Co.	33,600	12,000	25,800	27,800=	99,200
Crude Rubber Co.	41,100	11,100	25,800	1,700=	79,700
Reimers & Meyer	21,400	700	27,100	=	49,200
Flint & Co.	24,000	4,800	7,500	=	36,300
Lawrence Johnson & Co.	11,700	2,600	17,600	=	31,900
Albert T. Morse		2,700	7,700	=	10,400
Otto G. Mayer & Co.			7,800	=	7,800
P. Lima	2,600		1,200	=	3,800
Total	219,400	45,700	161,700	30,700=	457,500

	1897.	1896.	1895.
January Imports from Pará	1,393,500	2,718,300	2,869,500
February Imports	3,684,300	1,945,900	2,274,400
March Imports	2,436,600	2,786,300	3,611,700
April Imports	1,557,600	1,941,500	2,156,400
May Imports	1,683,900	1,527,800	1,651,400
June Imports	1,032,700	583,900	1,030,100
July Imports	1,214,500	727,000	666,200
August Imports	1,098,800	875,500	766,500
Total	14,101,900	13,106,200	15,026,200

PARA IMPORTS VIA EUROPE.

August 5.—By the steamer *Germanic*, from Liverpool:

Reimers & Meyer	5,000				=	5,000

August 7.—By the steamer *Etruria*, from Liverpool:

George A. Alden & Co.	58,500				=	58,500

August 11.—By the steamer *Teutonic*, from Liverpool:

George A. Alden & Co.	28,200				=	28,200

August 13.—By the steamer *Campania*, from Liverpool:

George A. Alden & Co.	8,900			32,500	=	41,400
Albert T. Morse				4,800	=	4,800

August 20.—By the steamer *Britannic*, from Liverpool:

Albert T. Morse	22,000				=	22,000

August 21.—By the steamer *Umbria*, from Liverpool:

George A. Alden & Co.	48,600				=	48,600
Reimers & Meyer	35,000				=	35,000
Albert T. Morse				18,000	=	18,000

August 23.—By the steamer *La Gascogne*, from Havre:

Otto G. Mayer & Co.				20,600	=	20,600

August 23.—By the steamer *California*, from Havre:

Otto G. Mayer & Co.	7,000			25,300	=	32,300

August 25.—By the steamer *Majestic*, from Liverpool:

Reimers & Meyer	25,000				=	25,000
Albert T. Morse	11,000		25,000		=	36,000

August 27.—By the steamer *Lucania*, from Liverpool:

George A. Alden & Co.	29,700		35,000	19,300	=	84,000
Reimers & Meyer	40,000		17,000		=	57,000

August 30.—By the steamer *La Champagne*, from Havre:

George A. Alden & Co.				135,000	=	135,000
Otto G. Mayer & Co.				65,000	=	65,000
Reimers & Meyer				40,000	=	40,000
Total	318,900	99,800	337,700		=	756,400

OTHER NEW YORK ARRIVALS.

BELOW will be found in detail the imports at New York during August, 1897, of India-rubber from Mexico, Central America, and South America, other than Pará grades; also arrivals at New York of African and East Indian sorts:

CENTRALS.

	POUNDS.
AUG. 2.—By the *El Norte*=New Orleans:	
Albert T. Morse	2,500
AUG. 3.—By the *Alleghany*=Greytown:	
Andreas & Co.	4,500
A. P. Strout	4,000
Munoz & Espriella	1,700
G. Amsinck & Co.	1,009
A. N. Rotholz	1,000
W. R. Grace & Co.	800
Total	13,000
AUG. 4.—By the *Vigilancia*=Mexico:	
H. Marquardt & Co.	1,200
Flint, Eddy & Co.	500
F. Probst & Co.	300
E. Steiger & Co.	200
H. W. Peabody & Co.	300
Total	2,500
AUG. 9.—By the *Louisiana*=New Orleans:	
Albert T. Morse	4,500
Gillespie Bros. & Co.	2,000
Total	6,500
AUG. 9.—By the *Alene*=Port Limon:	
Hoadley & Co.	1,500
Eggers & Heinlein	1,000
Total	2,500
AUG. 11.—By the *Advance*=Colon:	
W. R. Grace & Co.	4,097
A. Santos & Co.	3,680
A. M. Capen Sons	3,060
R. F. Cornwell	2,152
Dumarest & Co.	2,138
A. P. Strout	1,875
G. Amsinck & Co.	1,563
Roldan & Van Sickle	1,580
J. B. Sageman	1,190
J. Aparicio & Co.	849
D. A. DeLima & Co.	780
Eimenhorst & Co.	564
Munoz & Espriella	415
D. Nieto & Co.	188
Total	24,131
AUG. 11.—By the *Alps*=Cartagena:	
D. A. DeLima & Co.	1,500
John Boyd, Jr., & Co.	1,200
Schultz & Ruckgaber	600
Punderford & Co.	600
Total	3,900
AUG. 17.—By the *Altai*=Greytown:	
G. Amsinck & Co.	3,500
Andreas & Co.	3,000
Munoz & Espriella	1,500
H. Feltman & Co.	1,000
Total	9,000
AUG. 19.—By the *El Sol*=New Orleans:	
Albert T. Morse	4,500
AUG. 18.—By the *Seneca*=Mexico:	
Thebaud Bros.	1,000
H. Marquardt & Co.	200
J. W. Wilson & Co.	300
Total	1,500
AUG. 21.—By the *Finance*=Colon:	
Isaac Brandon & Bros.	4,262
H. Feltman & Co.	2,600
Piza, Nephews & Co.	2,506
Munoz & Espriella	1,296
J. Aparicio & Co.	567
Total	11,231
AUG. 21.—By the *Cuvier*=Bahia:	
New York Commercial Co.	5,000
AUG. 24.—By the *Adirondack*=Port Limon:	
Thebaud Bros.	1,000
A. N. Rotholz	700
Eggers & Heinlein	800
Total	2,500
AUG. 25.—By the *Andes*=Cartagena:	
D. A. DeLima & Co.	3,000
Flint, Eddy & Co.	1,000
Kunhardt & Co.	1,200
For Bremen	500
Total	5,700
AUG. 30.—By the *El Dorado*=New Orleans:	
Albert T. Morse	3,000
AUG. 30.—By the *Louisiana*=New Orleans:	
Albert T. Morse	2,500
AUG. 31.—By the *Alleghany*=Greytown:	
G. Amsinck & Co.	7,300
Andreas & Co.	5,000
A. P. Strout	1,200
Total	13,700
AUG. 31—By the *Alliance*=Colon:	
A. Santos & Co.	6,510
Jose Agostini	4,700
Munoz & Espriella	2,800
I. Brandon & Bros.	2,808
W. R. Grace & Co.	2,540
Flint, Eddy & Co.	2,100
Roldan & Van Sickle	2,280
Dumarest & Co.	1,840
G. Amsinck & Co.	1,527
A. N. Rotholz	190
Total	27,295

Total Centrals for August	140,957
Total for July	178,021
Total for June	178,813
Total for May	169,435
Total for April	242,605
Total for March	215,671
Total for February	163,558
Total for January	255,082

AFRICANS.

	POUNDS.
AUG. 5.—By the *Germanic*=Liverpool:	
Otto G. Mayer & Co.	50,000
Reimers & Meyer	31,200
George A. Alden & Co.	4,700
W. A. Brown & Co.	5,000
Total	90,900
AUG. 6.—By the *Ems*=Naples:	
George A. Alden & Co.	2,100
AUG. 7.—By the *Etruria*=Liverpool:	
George A. Alden & Co.	41,000
Reimers & Meyer	2,300
Total	43,300
AUG 9.—By the *Georgic*=Liverpool:	
Sgal & Co.	7,200
AUG. 11.—By the *Palatia*=Hamburg:	
Reimers & Meyer	5,100
AUG 10.—By the *Westernland*=Antwerp:	
Albert T. Morse	101,000
Otto G. Mayer & Co.	15,400
Reimers & Meyer	23,400
Total	139,800
AUG. 11.—By the *Teutonic*=Liverpool:	
Henry H. Smythe	5,000
AUG. 13.—By the *Campania*=Liverpool:	
Reimers & Meyer	36,200
George A. Alden & Co.	6,100
Sgal & Co.	1,800
Total	44,100
AUG. 19.—By the *Servia*=Liverpool:	
George A. Alden & Co.	11,200
AUG. 19.—By the *Prussia*=Hamburg:	
George A. Alden & Co.	27,800
Reimers & Meyer	30,000
Total	57,800
AUG. 21.—By the *British Queen*=Antwerp:	
George A. Alden & Co.	66,300
Albert T. Morse	43,000
Total	109,300

AUG. 21.—By the *Umbria*=Liverpool:

George A. Alden & Co.	8,600
Reimers & Meyer	2,300
Sgal & Co.	9,900
Total	20,800

AUG. 24.—By the *Mobile*=London:

Wm. A. Brown & Co.	2,500

AUG. 25.—By the *Majestic*=Liverpool:

Reimers & Meyer	1,000

AUG. 27.—By the *Lucania*=Liverpool:

George A. Alden & Co.	135,900
Sgal & Co.	5,000
Otto G. Mayer & Co.	5,000
Reimers & Meyer	1,500
Total	147,400

AUG. 27.—By the *Columbia*=Hamburg:

Albert T. Morse	4,000

AUG. 28.—By the *Ulriken*=Hamburg:

Albert T. Morse	10,000

AUG. 30.—By the *Cevic*=Liverpool:

Reimers & Meyer	7,800

AUG. 30.—By the *Friesland*=Antwerp:

Reimers & Meyer	7,000

Total Africans for August	716,000
Total for July	957,600
Total for June	466,300
Total for May	953,321
Total for April	892,700
Total for March	816,311
Total for February	737,700
Total for January	899,000

EAST INDIAN.

POUNDS.

AUG. 3.—By the *Megantic*=London:

Reimers & Meyer	11,200

AUG. 3.—By the *Manitoba*=London:

Wm. A. Brown & Co	9,700

AUG. 9.—By the *Georgian*=London:

Reimers & Meyer (Pontianak)	70,000

AUG. 13.—By the *Sikh*=Singapore:

George A. Alden & Co. (Pontianak)	118,200
Reimers & Meyer (Pontianak)	75,000
Total	193,200

AUG. 19.—By the *Aladdin*=Singapore:

Reimers & Meyer (Pontianak)	102,700
Windmuller & Roelker	3,000
Total	105,700

AUG. 27.—By the *St. Louis*=Southampton:

George A. Alden & Co.	3,000

Total East Indian for August	392,800
Total for July	219,800
Total for June	159,900
Total for May	188,400
Total for April	86,500
Total for March	58,100
Total for February	80,600
Total for January	178,000

GUTTA-PERCHA.

POUNDS.

AUG. 11.—By the *Palatia*=Hamburg:

Robert Soltau & Co.	2,300

AUG. 13.—By the *Sikh*=Singapore:

Reimers & Meyer	11,600

AUG. 19.—By the *Aladdin*=Singapore:

George A. Alden & Co.	2,300

AUG. 25.—By the *Pennsylvania*=Hamburg:

Robert Soltau & Co.	6,000

BALATA.

AUG. 6.—By the *Curacao*=Trinidad:

Cadenas & Coe.	3,000

AUG. 25.—By the *M. R. Cuza*=Cuidad Bolivar:

Thebaud Brothers	12,000

RECAPITULATION.

	POUNDS.
Pará—direct imports	1,098,800
Pará—via Europe	756,400
Centrals	140,957
Africans	716,000
East Indian	394,800
Gutta-percha and Balata	37,200
Total at New York for August	3,142,157
Total for July	2,610,921
Total for June	1,833,913
Total for May	3,141,556
Total for April	3,180,405
Total for March	3,563,557
Total for February	4,719,158
Total for January	2,668,182

BOSTON ARRIVALS.

POUNDS.

AUG. 3.—By the *Sagamore*=Liverpool:

George A. Alden & Co. (African)	3,152

AUG. 3.—By the *Catalonia*=Liverpool:

Reimers & Meyer (African)	6,144

AUG. 7.—By the *Norseman*=Liverpool:

George A. Alden & Co. (East Indian)	2,928
Reimers & Meyer (East Indian)	2,929
Boston Rubber Shoe Co. (Fine Pará)	5,601
Total	11,458

AUG. 17.—By the *Sachem*=Liverpool:

Reimers & Meyer—(African)	8,065

AUG. 25.—By the *Kansas*=Liverpool:

Boston Rubber Shoe Co (Fine Pará)	40,763

AUG. 29.—By the *Roman*=Liverpool:

George A. Alden & Co. (African)	15,891
Geo. A. Alden & Co. (Coarse Pará)	6,750
Total	22,641

Africans	33,250
East Indian	5,857
Pará	53,114

Total at Boston for August	92,221
Total for July	209,014
Total for June	115,700
Total for May	228,823
Total for April	130,858
Total for March	141,162
Total for February	209,318
Total for January	227,245

NEW ORLEANS.

AUGUST.

	POUNDS.	VALUE.
From Nicaragua	18,773	$7,480

CUSTOM-HOUSE FIGURES.

PORT OF NEW YORK—JULY.

	POUNDS.	VALUE.
Imports:		
India-rubber	2,925,169	$1,376,940
Gutta-percha	48,970	13,605
Gutta-percha (jooloong)	89,563	900
Total	3,123,702	$1,390,935
Exports:		
India-rubber	58,314	$27,766
Reclaimed rubber	19,616	2,471

JULY EXPORTS OF INDIA-RUBBER FROM PARA.

[NOTE.—The figures denote weights in Kilograms.]

EXPORTERS.	UNITED STATES.					EUROPE.					TOTAL.
	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	
Pusinelli, Prüsse & Co.	63,170	13,215	47,040	75,907	199,332	28,900	6,460	6,900	9,300	51,560	250,892
Adelbert H. Alden	65,110	10,000	42,990	3,598	121,698	31,280	2,040	9,150	—	42,470	164,168
La Rocque da Costa & Co.	29,410	7,180	33,200	429	70,219	26,700	540	23,360	—	50,600	120,819
R. F. Sears & Co.	31,790	3,910	21,300	20,458	77,458	—	—	—	—	—	77,458
Rud. Zietz	—	—	5,700	—	5,700	30,450	3,150	15,300	—	48,900	54,600
Denis, Crouan & Co.	—	—	—	—	—	3,570	680	1,460	—	5,710	5,710
Pires, Teixeira & Co.	2,780	—	2,000	—	4,780	—	—	—	—	—	4,780
Sundry Small Shippers	—	—	2,700	—	2,700	—	—	13,200	—	13,200	15,900
Direct from Iquitos	—	—	—	—	—	358	—	15,203	42,754	58,315	58,315
Direct from Manáos	40,070	22,305	23,640	7,773	93,788	35,159	7,378	19,907	41,654	104,098	197,886
Total for July	232,330	56,610	178,570	108,165	575,675	156,417	20,248	104,480	93,708	374,853	950,528
January-June	2,839,016	650,621	1,552,739	646,942	5,689,318	3,083,906	625,579	1,258,703	863,332	5,786,520	11,475,838
Total for 1897	3,071,346	707,231	1,731,309	755,107	6,264,993	3,240,323	645,827	1,363,183	957,040	6,161,373	12,426,366
Total, July, 1896	116,346	33,338	106,048	34,653	290,385	270,233	35,210	125,824	93,293	524,560	814,945

EXPRESSED IN POUNDS.

July Exports, 1896: To United States, 638,847; to Europe, 1,154,032; total, 1,792,879.
July Exports, 1897: To United States, 1,266,485; to Europe, 824,676; total, 2,091,161.
For the year 1897: Percentage to United States, 50.41; to Europe, 48.59.